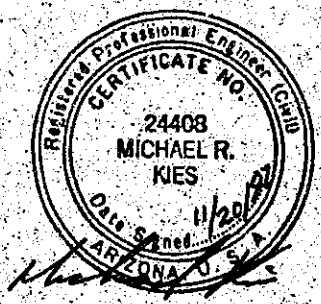
West Sedona North/South Off-Highway Circulation Study

Prepared for

The City of Sedona



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West Sedona North/South Off-Highway Circulation Study

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Introduction

Sedona's interior roadway network now relies heavily on State Routes 179 and 89A for interconnection of local streets. As the City's only true "arterials," both state highways not only accommodate the traffic associated with Sedona's four million annual visitors, but also its local population. The challenge of this study is to allow both regional and local functions to coexist with minimal conflict. This challenge is further tempered by a need to identify and implement future system improvements that are not only functionally efficient, but also compatible with the community's goals of maintaining the area's scenic and natural resources, as well as its small-town character as described in the Sedona Community Plan. The Community Plan strongly advocates the creation of pedestrian links and an off-highway circulation system in lieu of major thoroughfares.

The Sedona Highway Corridor Assessment was completed in 1996, and adopted in May 1997, and many recommendations were included along the SR89A corridor through West Sedona. This off-highway study should create recommendations that compliment those described in the corridor assessment. The system elements should dovetail, each encouraging the desired operations or each plan.

Problem Statement

The primary transportation corridor in West Sedona is SR89A, a 5-lane arterial roadway. Currently this facility serves regional traffic in combination with local traffic accessing the numerous commercial properties that flank both sides of the highway. The combination of local short trips with regional trips has created a situation of high traffic volumes and a significant number of turning volumes. The high turning volumes observed throughout the corridor is an element adding to traffic delays, and the potential for accidents.

Many local trips within West Sedona, whether it be by auto, bike, or foot must use SR89A because no other routes are available. A significant number of trips accessing SR89A from the surrounding neighborhoods are forced to travel on the highway less than one-half mile. These short trips can amplify existing congestion, especially if drivers are forced to weave across lanes of traffic in a short distance.

To help limit the number of unprotected turning conflicts, the City of Sedona has been involved in implementing traffic signals along SR89A. The Sedona Community Plan indicates that the need for new signal locations must be carefully evaluated, and the minimum spacing of traffic signals should be one-quarter mile. These guidelines would not allow for traffic signals to be implemented on SR89A at the exit point of each individual neighborhood.

There is strong public support to begin implementation of facilities for alternate modes of transport, such as pedestrian and bicycle paths. Currently the only continuous east-west corridor across West Sedona is SR89A. In many locations SR89A provides adjacent sidewalks, however, the cross section of SR89A is not wide enough to allow for bike lanes to be incorporated. The urban character of the corridor with numerous driveway locations, and intersections with high turning volumes, does not make the SR89A corridor desirable for alternative modes.

The limited opportunities for widening SR89A or implementation of new traffic signals, indicate that relief from traffic congestion on SR89A will not be obtained by conventional methods, such as highway widening. Solutions must be found that allow for trips to be made off of the highway, however these recommendations must not conflict with the desired character that the community wishes to preserve.

Project Need

The primary need for evaluating off-highway facilities is to offset the anticipated congestion on SR89A. The Sedona Highway Circulation Study documents the 1995 vehicular traffic conditions and predictions for 2010. Figures 1 and 2 are presented from the Sedona Highway Circulation Study, these figures display 24-hour traffic volumes on key roadways throughout the City, and predicted Levels of Service (LOS).

The concept of LOS is defined as a measure of traffic congestion as perceived by motorists and passengers. Six levels of service are defined for each type of facility. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F, the worst.

It is desirable to have facilities operate at LOS C or better, and facilities that operate at LOS F should be avoided. LOS C marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence or others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Operations are characterized by stop and go waves, and are extremely unstable.

The importance of SR89A to the regional transportation system will not be diminished as time marches on. In fact, ADOT has plans to upgrade SR89A to a 4-lane divided highway from Cottonwood to Sedona in the near future. The degradation of traffic conditions predicted for the year 2010 is primarily due to the substantial increase in traffic on SR89A. A portion of this increase will be due to regional and tourist trips, therefore City land use planning or limitations on growth within Sedona may not be able to curb increases in traffic volumes entirely.

EXISTING CONDITIONS
(YEAR 1995)

MATCHLINE - SEE BELOW RIGHT

INSERT 'A'

MATCHLINE - SEE INSERT 'A' ABOVE LEFT

LEGEND

- LOCAL ROADWAY
- COLLECTOR ROADWAY
- ARTERIAL ROADWAY
- SIGNAL CONTROL
- STOP SIGN CONTROL
- C/D — UNSIGNALIZED LOS (AM/PM)
- F/D — SIGNALIZED LOS (AM/PM)
- 600 — 24 HOUR VOLUME

FIGURE 1
EXISTING CONDITIONS

FUTURE CONDITIONS
(YEAR 2010)

MATCHLINE - SEE BELOW RIGHT

INSERT 'A'

MATCHLINE - SEE INSERT 'A' ABOVE LEFT

LEGEND

- LOCAL ROADWAY
- COLLECTOR ROADWAY
- ARTERIAL ROADWAY
- SIGNAL CONTROL
- STOP SIGN CONTROL
- C/D — UNSIGNALIZED LOS (AM/PM)
- F/D — SIGNALIZED LOS (AM/PM)
- 600 — 24 HOUR VOLUME

FIGURE 2
FUTURE CONDITION

As traffic volumes increase the potential for conflicts between turning vehicles at the numerous access points becomes greater. It is important that the City begin planning and implement facilities that give local residents choice between transportation modes and routes in addition to driving on SR89A.

Study Objectives

All transportation projects are proposed to produce benefits to the traveling public. The following objectives summarize the benefits that an off-highway circulation system should strive to produce.

The proposed system should help to ensure safe and efficient vehicular traffic circulation both within and through the community. The off-highway system will strive to provide access to a signalized intersection, either existing or planned, on SR89A for all residents in West Sedona. This will help improve driver safety along the SR89A corridor by giving the opportunity for all turning movements to be protected by a signal. The off-highway system will also offer residential trips optional routes so trips can be completed without using SR89A. Driver safety could be improved along the SR89A corridor by removal of short trips and the associated turning movements.

The proposed system should be compatible with the overall plan for managing traffic along the state highway systems within the City of Sedona. The current plan for the SR89A corridor is to reduce the number of access points and to control the access allowed at these locations. Primarily the plan calls for continuous raised medians along SR89A. The implementation of raised medians would limit the locations where turns can be made along SR89A. Many residential street intersections with SR89A are proposed to be limited to right in and right out only, this forces traffic to make a U-turn if their trip required a left turn movement. The proposed off-highway system should offer residents flexibility in route choices in order to avoid U-turn maneuvers once the raised median system is implemented.

The off-highway system should improve access to the various neighborhoods in West Sedona during times of emergency situations. Many neighborhoods in West Sedona currently have one point of departure, usually an intersection with SR89A. Should an emergency situation occur at these exclusive exit locations, the remaining neighborhood would not only be inconvenienced, but could be at risk should an additional emergency occur. The off-highway system should strive to provide a minimum of two points of departure from all residential neighborhoods in West Sedona. In addition, the off-highway system will help disperse traffic within neighborhoods rather than concentrating it in one area.

The proposed system should help to ensure safe and efficient non-motorized traffic circulation within the community. The only continuous east-west corridor available to traverse West Sedona by non-motorized methods is SR89A. However, with the amount of traffic present on SR89A and the numerous access drives, this corridor is not desirable for safe and efficient travel. The proposed off-highway system should help create new corridors for non-motorized trips that offer desirable conditions for persons of all ages.

Overview of the Study Process

The study process for the off-highway system was developed to recommend a plan from the numerous ideas and suggestions that have been created in the past few years. The proposed elements of the off-highway system were evaluated using a qualitative method, meaning the connections were not actually designed so quantitative information could not be measured. The qualitative method is used rather than a detailed quantitative method, to limit the amount of City resources being spent on this effort. The process combines engineering judgement and public involvement to create a plan, and methods for implementation using minimal amount of engineering and City staff.

Inventory of Previous Ideas

The first component of the study process is to inventory all of the off-highway system elements that have been proposed in the past. Significant resources included City of Sedona staff, the Sedona Community Plan (including the Sedona Area Transportation Study), the Master Facilities Program, and the West Sedona Commercial Corridor Study.

Public Participation

An important element of any transportation study is the public participation process. During this study, a two-step process was used. First, the inventory of previous ideas for off-highway connections was discussed, and comments and concerns gathered. Secondly, the results of the evaluation and recommended plan was presented for public input.

Initial Screening

Following the initial portion of the public participation process, the numerous off-highway connections were screened. The initial screening eliminated connections from further consideration based on fatal flaws. A fatal flaw is defined as a problem with the proposal that will result in the connection not being implemented. An example of a fatal flaw may be excessive costs to implement the connection.

Evaluation

Following the initial screening, numerous connections that could be implemented remained. The evaluation process rated each proposed connection in each of a series of categories, and concluded which connections should be implemented. The evaluation process was a qualitative process, using engineering judgement, community input, and recommendations from City of Sedona staff.

Recommended Plan

The proposed connections that were endorsed by the evaluation process were combined to generate the Recommended Plan. The Recommended Plan includes the proposed elements that are considered the most viable for implementation, and adhere to the objectives of the study. This plan was presented to the public for input, comprising the second portion of the public participation process.

Implementation

The City of Sedona does not have the resources available to implement the Recommended Plan in a single effort. Funds will have to be programmed over time as available, therefore the City requires direction as to what elements should be considered first. The Implementation Plan is a roadmap for City staff to program and construct the more important elements of the plan first, leaving elements with less priority for future implementation.

Inventory of Elements Considered

An extensive range of proposed elements was compiled for consideration in the off-highway system. The elements ranged from high-powered collector roadways, to less significant residential connections. Some connections would aid access to commercial properties, while others would connect to City services such as schools or the library.

Previous Studies and Community Plan

The primary sources for proposed elements to the off-highway system came from past documents.

Community Plan

The active Sedona Community Plan at the time of this study was adopted by the Sedona City Council in November 1991. The Community Plan identifies specific connections, and gives guidance to this study. Section 4.3.1. (C) of the Plan identifies the existing transportation system deficiencies. The Plan identifies lack of alternative routes, lack of planned bicycle circulation, and lack of pedestrian circulation among other issues. Section 4.3.3 includes the circulation visions for the community, including:

> Objective 3.1A - Provide alternative modes of travel through the development of a circulation system that integrates compatibly with the sensitive and picturesque topography of Sedona
>
> Objective 3.1.C - Create neighborhood street patterns and circulation systems which preserve neighborhood integrity, serve local traffic and provide inter-neighborhood vehicular linkages.
>
> Objective 3.1.E - Design the physical or implied separation of motorized circulation and other modes of travel by promoting the development of bicycle paths, equestrian trails, pedestrian sidewalks and jogging paths separated from streets.
>
> Objective 3.1.F - Utilize accepted circulation system components to enhance the safety of non-motorized modes of circulation.

Section 4.3.5 (F) of the community plan gives guidance for new roadways. The off-highway study is described in the following paragraph:

> Although the interconnection of subdivisions has its technical benefits for circulation purposes, the City of Sedona should closely review any such proposal before implementation to re-evaluate the community's sentiment on the issues which have caused prior

dissatisfaction with these proposals. It should be recognized that although a certain connection may be identified for study, it does not imply that the linkage will eventually be built. In fact, in some cases the study will build credibility as to why a linkage should not be constructed due to excessive negative issues associated with the corridor in question. In the future, other potential connections may also be identified which are not currently specified in the Sedona Community Plan.

The Community Plan identifies the following potential roadway extensions and subdivision connections.

- Thunder Mountain Drive
- Forest Road
- Whippet Way
- Kachina Drive
- Foothills South Drive
- Northview Road
- Panorama Blvd. (to the East)
- Panorama Blvd. (to the West)

Forest Road is not included in the scope because this study is concerned with West Sedona. The remaining connections will be evaluated in this study.

Sedona Area Transportation Study

The Sedona Area Transportation Study was completed by Parsons Brinckerhoff in 1991 for the City of Sedona. This study was a comprehensive analysis of transportation issues for the City of Sedona and the surrounding unincorporated areas. Included in the study of transportation systems were highway, transit, bicycle and pedestrian modes of travel. The study identified special issue problems, opportunities, and expressions of public sentiment.

Included in the recommendations of the Sedona Area Transportation Study were potential locations for new subdivision connections, including the following:

- Extend Kachina Drive east to Southwest Drive
- Extend San Patricio Drive east to Soldiers Pass Road
- extend Silex Circle Northeast to Mountain Shadows Drive
- Extend Point Drive west to El Camino Road
- Extend Foothills South Drive east to Panorama via Stanley Steamer Drive
- Extend Whippet Way east to Shelby Road
- Connect Northview Road to Sunset Drive
- Extend Panorama Blvd east to Rockridge Drive
- Extend Birch Street south to Panorama Blvd.

All of the recommended connections listed in the Sedona Area Transportation Study have been included in this study for evaluation.

Masters Facilities Program

A list of potential road connections and preliminary costs was prepared by Management Services Institute and accepted by the City Council in 1992 as a planning guide in the preparation of potential capital improvement projects. Resources included the Sedona Community Plan, Sedona Area Transportation Study, and City staff.

One potential connection that was listed in the Master Facilities Program but not directly recommended in the other two documents was to extend Sanborn Drive to Zane Grey Circle. This connection was evaluated in the Off-Highway study.

West Sedona Commercial Corridor Study

The West Sedona Commercial Corridor Study (WSCCS) is an overall planning effort for West Sedona, intended to provide a framework through which future public and private sector improvement projects may be integrated and implemented. The WSCCS includes many of the recommendations listed in the Community Plan and the Sedona Area Transportation Study, however, the study includes many roadway interconnections near SR89A. These interconnections, either vehicular or non-vehicular, are proposed to offer new access choices to many of the commercial properties along SR89A. A significant portion of these connections would require redevelopment of the properties along SR89A for implementation. However, only those connections proposed on properties where redevelopment appears favorable in the near future are graphically included in this study. The WSCCS also recommended a number of off-highway residential connections and discouraged the construction of major collector routes.

In the West Sedona Commercial Corridor Study, there is significant discussion regarding commercial re-development options that include potential commercial roadway linkages from Northview Road to Oak Creek Blvd/Saddlerock/Soldier Pass and Airport Road.

Collector Corridors

North Side Collector Corridor

The Sedona Area Transportation Study recommends the addition of a new corridor north of SR89A that would connect the areas west of Dry Creek Road to Sanborn Drive. At the time of this study, Thunder Mountain Road has been extended to Dry Creek Road, and a portion of Navoti Drive has been constructed. These elements form a significant portion of the corridor recommended in the Sedona Area Transportation Study. Therefore, reference to a North Side collector corridor no longer applies, This report will address the remaining links that are needed to complete the Navoti Drive portion of this corridor.

South Side Collector Corridors

The Sedona Area Transportation Study and the Community Plan recommends the connection of Foothills South Drive to Stanley Steamer, essentially creating a southside collector route. Public concern over the additional traffic on these roadways called for an evaluation of a proposed collector corridor south of Foothills South Drive and Panorama Blvd. The proposed route would be primarily contained in National Forest lands. This study has included these two concepts for evaluation as follows:

- **Southern Collector - A;** Collector roadway along the Foothills Drive South and Stanley Steamer alignments.
- **Southern Collector - B;** Collector roadway extending from Upper Red Rock Loop Road (URRL) to Airport Road along an alignment that remains in National Forest lands.

Figure 3 presents schematically all of the connections included in this study, including the approximate alignments of the two southern collectors.

Off-Highway Links

The numerous short links that were included in this study have been divided based on their location relative to SR89A. Those links located north of SR89A make up the north side links, and are numbered and designated with an "N," while the links south of SR89A are designated with an "S."

The links can be grouped into four basic types, each type has unique benefits to add to the off-highway system as described below:

Backside Access

Connectors that fall into this group are primarily located near the SR89A corridor. The purpose of these connectors is to offer access to commercial properties along SR89A from the side streets that intersect with the highway. The objective of this type of connection is to remove turning vehicle conflicts from SR89A, and therefore increasing the throughput of the highway and reducing the safety risks associated with turning vehicles.

Many of the turning movements along SR89A are located at the numerous access drives to commercial properties that flank the corridor. A goal of the community is to better manage these movements along SR89A by implementing a raised median system. Since it is the desire of the City not to reduce access to any commercial property, however, The raised medians will limit the access to driveways located along SR89A, and the backside access connections will ensure that full access to all commercial properties remains intact.

A significant number of commercial properties along SR89A can only be accessed from the highway at this time. Residents of West Sedona currently must access these properties by turning onto the highway, traveling a short distance, and then turning into the desired property. The backside access type of connection is proposed to help reduce the need for these short trips to use SR89A. A resident wishing to access properties along SR89A will be offered the option to travel towards the highway, but turn onto a backside access road in advance of SR89A, and access the commercial property from the rear. Each trip that can be removed from the highway in this fashion will remove four turning maneuvers (assuming the trip is two directional) for SR89A, liberating capacity on the highway for longer trip purposes.

INSET

N-24

Soldier's Pass

Farmer Brothers

Sanborn Drive

Thunder Mountain Road

N-16

N-15

N-14

Sanborn Drive

N-22

N-18

N-17

Mayfield

Shadows Drive

N-10

N-23

N-20

N-8

Andante Drive

N-12

Coffee Pot Road

Soldiers Pass

N-21

N-13

Possee Ground

N-9

N-11

N-19

N-7

N-4

SR 89A

N-6

S-20

N-5

S-10

S-13

S-21

S-15

N-3

S-5

Sunset Drive

S-16

S-22

S-9

Shelby Drive

Northview

S-23

S-1

S-18

N-2

S-7

S-11

Arroyo Pinon

S-19

S-6

S-24

S-17

S-3

S-4

El Camino Road

S-25

S-26

S-8

S-14

Airport Road

S-2

Foothills South Drive

Mayfair Drive

SR 89A

N-1

S-12

S. Collector - A

S. Collector - B

LEGEND

CONNECTION NUMBER	N-2
APPROXIMATE LOCATION OF CONNECTION	———
OPTIONAL ALIGNMENTS OF CONNECTION	– – –
PROPOSED COLLECTOR ROUTES	—·—·—

FIGURE 3

CH2MHILL

CITY OF SEDONA ARIZONA

NEIGHBORHOOD LINKS CONSIDERED

ROUTE West Sedona

North/South Alternative Routes

Neighborhood Interconnections

Many neighborhoods in West Sedona could be referred to as "residential islands," meaning they are isolated from the other areas of the City except for their connection to SR89A. Therefore any trip that wishes to leave a residential island and travel to another residential area must access SR89A (there are no other options). This not only forces trips made by residents to use SR89A, but also trips that serve the residents. Trips that serve residents include City services, such as garbage pickup, school bus routes, and water meter readers. Other services such as mail service (if implemented), newspaper delivery, and parcel assistance are not able to create routes that minimize their use of SR89A. In addition to vehicle trips, bicycle and pedestrian trips between these residential islands and adjacent neighborhoods must use SR89A.

A few of these residential islands are only provided with one access location onto SR89A. A concern over this situation is when an emergency, or significant situation occurs that will close or severely limit these access points onto SR89A. Traffic accidents, utility and highway maintenance can close minor intersections onto SR89A for substantial periods of time. Residents that live within the residential islands can be inconvenienced by limited access to other parts of the City, as well as being provided limited services during these periods of time.

The need for these neighborhood interconnections is to remove unnecessary residential related trips for the highway. The objective of these connections is purely to serve and enhance the residential neighborhoods of West Sedona. A secondary objective of the neighborhood interconnections is to upgrade residential islands to a minimum of two access points.

Signal Connector

The most efficient method to safely serve a facility with a high number of turning vehicles is to provide signalized intersections where the turns are made. However, signals can not be provided at every intersection along SR89A; only a limited number of locations are available in West Sedona. The Sedona Community Plan limits the spacing of signals to one-quarter mile, and cautions the community to carefully evaluate new locations to avoid unnecessary signals. An objective of this study is to give all residents of West Sedona access to a signalized intersection, either existing or planned.

The proposed connections evaluated in this study that are classified as signal connectors, connect neighborhood streets such that residential areas are no longer deprived of the ability to access SR89A through a traffic signal.

Neighborhood Route Enhancement

There are several important destinations that attract trips from the residential areas of West Sedona. Examples of these types of destinations include, but are not limited to, schools, the library, medical facilities, and shopping centers. Many residents expect efficient and reliable access to services that are important to their everyday activities. Travel options to these locations are important to the residents of West Sedona, not only by car, but the ability to choose various modes of transportation.

The objective of the connectors that are classified as neighborhood route enhancements is to provide a new route for key trips that will enable the residents of West Sedona to avoid using SR89A. A further explanation of this concept will be included as each connector is discussed in the following section.

Developer Access/Implementation

The final group of connectors are those that would be initiated by a developer to access its property, but at the same time will create a connection that currently does not exist. These connections would not be funded or implemented by the City. The City would adopt these connections and then have any plans for development incorporate the connection in the site plan.

North Side links

N-1, Navoti Drive (Compactor to Bristlecone Pines)

This connector provides backside access for the commercial properties along SR89A.

N-2, Ruby Drive Extension

This connection is an extension of Ruby Drive that will provide developer access to undeveloped land (future project).

N-3, Navoti Drive (Sedona Medical Center to Dry Creek)

The extension of Navoti Drive would function as a neighborhood route enhancement. The western portion of this link would be implemented in conjunction with new development. Residents in the subdivisions along Bristlecone Pines Road would have the option to access the Library and commercial properties along Dry Creek without using SR89A. Residents in the Kachina Heights area and other subdivisions along Dry Creek would be able to travel to access the proposed cultural park and the Sedona High School by using Navoti Drive instead of SR89A. Cultural Park zoning conditions will limit access to 89A for major special events.

N-4, Cardinal Lane (Dry Creek to Roadrunner)

Currently the residents of the Roadrunner Rancho subdivision do not have convenient access to a traffic signal along SR89A. This signal connector would give these residents access to the SR89A/Dry Creek intersection.

N-5, White Bear Road (Dry Creek to Roadrunner)

The primary function of this connection is for backside access to the properties along SR89A. A significant portion of this connection could be implemented with new development. Additionally, this connection would serve as a signal connection from Roadrunner Drive to the signalized intersection at Dry Creek Road.

N-6, Commercial Access (Sinagua to Southwest)

This connection is proposed as backside access to the properties along SR89A.

N-7, Southwest Drive Commercial Access

Two alternatives have been proposed for this developer access connection:

- Southwest to Cantabile - This would give access to new development proposed at this location by extending Cantabile Street to Southwest Drive. Access to SR89A could be limited since this proposed connection would provide patrons access to intersections on SR89A at both Harmony Drive and Southwest Drive.
- Southwest to SR89A - The proposed connector would create a new intersection on SR89A approximately 500 ft east of the intersection at Southwest Drive. The access road would continue north from SR89A to intersect with Southwest Drive. With this proposed alignment, no connection to Cantabile Street is included.

N-8, Harmony Hills Connector (Tranquil to Rodeo)

This connection would give residents along Madole Road access to the traffic signal at the Rodeo/SR89A intersection. Additionally this would offer access to undeveloped land east of Tranquil Avenue. The connection could be implemented in two sections, one from Madole to Rodeo Road, and one from Madole to Tranquil Avenue. The first section would be classified as a signal connector and the second as developer access.

N-9, Commercial Access (Tranquil to SR89A)

This connection would provide developer access to properties that have a possibility for redevelopment. Two options are included for the alignment of this connection, one would intersect SR89A at Rigby Road, and the other at Madole Road. The choice of alternative alignment would be decided at the time a developer submits a site plan, the site plan should be coordinated with site plans anticipated south of SR89A.

N-10, Finke Drive Extension

The Goodrow Subdivision is an example of a "residential island" with Goodrow Lane providing the only exit from the subdivision. The Finke Drive Extension would be a signal connection, providing access to the traffic signal at Rodeo Road and SR89A. Additionally this connection would act as a neighborhood interconnection, providing a second exit from the neighborhood, and giving residents alternatives to using SR89A.

N-11, Goodrow Connector

This connection offers the same benefits as connection N-10, however the proposed alignments are closer to SR89A. Two alternative alignments are proposed, one approximately 300 feet north of SR89A, referred to as N-11 (South). The second alignment is proposed approximately 500 feet north of SR89A, and is referred to in N-11 (North). The N-11 (South) alignment would enhance developer access to properties that front SR89A.

N-12, Contractors Extension

There are two alternative alignments for this connection, N-12 (North) is an extension of Yavapai Drive to Schimburg Road. N-12 (South) is an extension of Contractors Road to Goodrow Lane. Either of these connections would provide a signal connection for the residents of the Goodrow Subdivision.

N-13, Pony Soldier Connector

This connection is proposed as a neighborhood route enhancement. The shopping areas in the area of Coffee Pot Road and SR89A attract a significant number of trips from the surrounding neighborhoods. The objective of this connection is to offer the residents of the several subdivisions east of Coffee Pot Drive an alternative route to the Coffee Pot/SR89A commercial areas. This also provides alternative access to West Sedona School and Posse Ground Park from subdivisions west of Coffee Pot Drive. This may remove some trips from the section of SR89A between Coffee Pot and Mountain Shadows, this section of SR89A currently has the highest traffic volumes in the City.

N-14, Sanborn Drive Extension

This connection has the same objectives as connection N-13.

N-15, Coffee Pot Extension

This connection has the same objectives as connections N-13 and N-14.

N-16, Buena Vista Drive Extension

This connection is proposed as a neighborhood route enhancement. There currently is no connection between the subdivisions east of Coffee Pot Drive to the numerous subdivisions accessed via Sanborn Drive. To travel between these areas, one must travel down to SR89A, then a short distance on the highway, and back up into the neighborhoods. This connection is intended to relieve the out of direction travel associated with traveling between these neighborhoods.

N-17, Zane Grey to Mission Connector

This connection would add options to residential trips within the Sedona West and Mission Hills subdivisions. This connection can shorten trips to the West Sedona School for some residents, and this would provide a route that avoids using sections of Mountain Shadows Drive where driver sight distance is limited. This connection would provide alternative cross-town options if combined with other proposed connections such as N-14, and N-18.

N-18, West Sedona School Connector

This connection would provide a direct link to the West Sedona School from the subdivisions to the west. This would be an enhancement to the current routes available to the school.

N-19, Commercial Access (Mountain Shadows to Posse Ground)

This connection would provide backside access to properties located along SR89A. The implementation of this connector would allow for the construction of a raised median system along SR89A from Posse Ground to Mountain Shadows without restricting access to any of the commercial properties along the north side of the highway.

N-20, San Patricio Drive Extension

This connection would provide more direct access to a traffic signal on SR89A for residents of San Patricio Estates subdivision. Access would be provided to Soldiers Pass Road.

N-21, Vista Mountain Road (Posse Ground to Soldiers Pass)

This connection has the same objectives as connection N-20.

N-22, Pony Soldier Circle Extension

This connection has the same objectives as connections N-13, N-14, and N-15.

N-23, Grounds Drive Extension

This connection has the same objectives as connections N-13, N-14, N-15, and N-22.

N-24, Farmers Brothers to Cline Connector

This connection would be a neighborhood route enhancement, the significant out of direction travel for traveling between subdivisions along Soldiers Pass Road and subdivisions accessed via Sanborn Drive would be alleviated.

South Side links

S-1, El Camino Grande Extension

This connection would provide a connection to a traffic signal for the residents in the Juniper/Pinion Drive area.

S-2, Juniper Drive to Foothills Connector

A connection between Juniper Drive and Foothills South Drive would be classified as a neighborhood interconnection and will provide the Foothills South Subdivision with a second access location.

S-3, Juniper Drive to Arrõyo Pinõn Connector

This connection has the same objectives as S-1.

S-4, Arrõyo Pinõn Extension

This connection has the same objectives as S-2.

S-5, Arrõyo Pinõn to El Camino Connector (North)

This connection would provide backside access for properties along the south side of SR89A, and allow for the implementation of the raised median system along SR89A from Arroyo Pinõn to El Camino.

S-6, Arrõyo Pinõn to El Camino Connector (South)

This connection would serve as a neighborhood enhancement, if implemented in combination with S-3 or S-8 a neighborhood interconnection system would be created.

S-7, Point Drive Extension

This connection would offer residents of the Settlers Rest subdivision, a "residential island," a second access location, and access to the traffic signal at Dry Creek Road and SR89A.

S-8, El Camino to Carol Canyon Connector

This connection has the same objectives as S-7.

S-9, Commercial Access (Carol Canyon to SR89A)

This connection would provide backside access to properties along the south-side of SR89A, and would provide commercial access to undeveloped land along its alignment. The connection would offer the Settlers Rest Subdivision a second access location.

S-10, Commercial Access (Thunderbird to SR89A)

This connection offers backside access to properties along SR89A.

S-11, Northview Drive Extension

This connection is proposed as a neighborhood route enhancement. The shopping areas in the area of Coffee Pot Road and SR89A attract a significant number of trips from the surrounding neighborhoods. The objective of this connection is to offer the residents of the several subdivisions along Northview Road an alternative route to the Coffee Pot/SR89A commercial areas. This may remove some trips from the section of SR89A between Coffee Pot and Northview, this section of SR89A currently has the highest traffic volumes in the City.

S-12, Racquet Road to Stanley Steamer Connector

This connection would be a neighborhood route enhancement. Residents of West Sedona from the Foothills South subdivision to Sunset Drive would have an alternative route to SR89A. This connection would help to reduce traffic volumes and turning maneuvers on SR89A by giving a significant number of residents new route choices.

S-13, Commercial Access (Whippet Way to Shelby)

This connection would provide developer access to undeveloped properties and projected new development west of Shelby Drive.

S-14, Panorama to Sunset Connector

This connection has the same objectives as S-11.

Inspirational and Oak Creek Subdivisions

The Inspirational View and Oak Creek Boulevard area subdivisions offer residents streets that all intersect with SR89A, but do not offer convenient interconnection between the streets. Panorama Blvd connects most of the streets within these subdivisions but is located over 2000 feet from the highway. Recommendations to improve the operations of SR89A in this area include implementation of a partial raised median system and the closure of the View St, Inspirational Dr, and Birch St intersections with the highway. The combination of raised medians and closure of intersections create an effective way to reduce turning movements while maintaining access to properties along SR89A.

The following connections would act as a neighborhood route enhancement to reduce the out of direction travel between roadways in this part of West Sedona, and improve circulation once the highway improvements are implemented. Some of the connections

would improve access to the traffic signal at Northview and SR89A, or a proposed signal location at Oak Creek Boulevard.

- S-15, Ross Road Extension
- S-16, Northview to View Drive (North)
- S-17, Northview to View Drive (South)
- S-18, View to Inspiration Connector
- S-19, Inspiration to Oak Creek Connector
- S-20, Commercial Access (Northview to View)
- S-21, Oak Creek to Birch (North)
- S-22, Oak Creek to Birch (South)

S-23, Birch to Rockridge Connector

This roadway would serve as a neighborhood interconnection, joining Saddlerock subdivision and subdivisions immediately to the west. When the recommended improvements are constructed along SR89A, the Oak Creek Boulevard area subdivisions would be restricted to one exit point. This would come about by the recommendation to close the Birch Street intersection. The closure of this intersection is part of an overall plan to reduce the number of turning conflicts on SR89A throughout West Sedona. The S-23 connection also would give the Oak Creek Boulevard area subdivisions a second access point, while helping to reduce the turning movements on SR89A.

S-24, Willow to Rockridge Connector

This connection has the same objectives as S-23.

S-25, Panorama to Birch Connector

This connection has the same objectives as connections S-23 and S-24, however the connection is made between the Oak Creek, Inspirational and Northview subdivisions via Panorama instead. This connection would also give the residents of the Oak Creek subdivision access to the traffic signal at the Northview/SR89A intersection.

S-26, Panorama to Rockridge Connector

This connection would be a neighborhood route enhancement, joining the Saddlerock and Northview subdivisions. Trips made between these subdivisions could be made without using SR89A, reducing turning conflicts and traffic volumes on the highway.

Initial Public Input

The scope of the initial public involvement in this study included presenting the inventory of proposed connections to neighborhood groups. The neighbors were encouraged to give input to the objectives that this study should follow and air their concerns related to these connections.

To adequately gather comments from the residents of West Sedona, 16 areas were identified and meetings between the neighbors and City of Sedona staff scheduled. The 16 areas were mapped to include subdivisions or portions of a subdivision that would be directly impacted by the proposed connections. Some of the areas specifically targeted commercial property owners along SR89A.

A brief description of the 16 areas follows:

Area 1 - A portion of residents within the Kachina Subdivision along Kachina Drive, residents along Ruby Drive, the Del Sol Area, residents between Dry Creek Road and Roadrunner Drive and highway properties from Cultural Park to Roadrunner Drive.

Area 2 - Residents within the southern sections of the Harmony Hills Subdivision and residents along Madole Drive.

Area 3 - Residents of the Goodrow area.

Area 4 - This is a large area including portions of the Coffee Pot, the Sedona West, San Patricio Estates, and Vista Montana subdivisions. Because of the number and diversity of the residents, this area was further divided for meeting purposes.

Area 5 - Residents that would be affected by a proposed Southern Collector Roadway including the Foothill South Subdivision, a portion of the Keller Tracts, parcels to the east, and properties along Stanley Steamer.

Area 6 - Residents of Settlers Rest, Arroyo Pinion, Azul Celeste, and Juniper Knolls.

Area 7 - Residents of Sedona Meadows who live adjacent to the proposed Fairfield development.

Area 8 - Residents of the Northview subdivisions and Anazazi Village.

Area 9 - Residents of the Saddlerock, Oak Creek, and Inspirational View subdivisions.

Area 10 - Residents living adjacent to the Sanborn/Thunder Mountain corridor.

Area 11 - Commercial property owners along the north side of SR89A from Roadrunner Drive to Southwest Drive and between Andante and Madole.

Area 12 - Commercial property owners north of SR89A from Rodeo Road to Coffee Pot Drive.

Area 13 - Commercial properties along the north side SR89A from Mountain Shadows to Posse Ground.

Area 14 - Commercial property owners along the south side of SR89A from Stutz Bearcat to Juniper Drive

Area 15 - Commercial properties south of SR89A from Sunset Drive to Stutz Bearcat Road.

Area 16 - Commercial properties along the south side of SR89A from Airport Road to Kallof Drive.

The above descriptions of the public involvement areas are brief overviews of the area limits. More detailed information and properties could be obtained from City of Sedona.

Neighborhood Meetings

Numerous meetings were hosted by City of Sedona staff beginning on January 7th 1997, and continuing through May 12th 1997. The meetings were scheduled in the evening hours to better match availability of the neighbors. Residents in each public involvement area were invited to their appropriate meeting by mail. The meeting format included a presentation of the project objectives, and the proposed connections. Following the presentation, residents were encouraged to voice their comments and concerns and contribute ideas over the material presented.

General Objectives

Numerous comments on the objectives of this study were compiled during the initial public involvement meetings. The comments generally revolved around three significant objectives as follows: neighborhood character, traffic volumes and safety, and cost effectiveness.

Neighborhood Character

Over half of the comments received concerning the study objectives related to the preservation of neighborhood character. The residents indicated that this study should focus on neighborhood benefits rather than implementing connections that would benefit the entire community. The connections should maintain the current neighborhood character while benefiting the neighborhood. The residents wanted to avoid introducing commercial traffic into the neighborhoods, and encouraged the connections proposed to be indirect. The study objectives should include being attentive to areas of natural beauty and areas of significant vegetation.

Traffic Volumes and Safety

A second subject of resident comments addressed traffic issues. This study should only propose connections when a clear traffic or safety benefit for the residents can be realized. The connections proposed should provide residential access to signalized intersections, or should provide residents access to specific commercial uses. An objective of the study should be to not increase traffic significantly on existing streets, or create a more significant safety problem.

Cost Effectiveness

An objective to limit proposals to those that are the most cost effective was voiced by the residents. Recommendations made were to not consider connections where an existing alternative already exists, and that the costs of the recommendations should be compared to the expected benefits. The residents suggested that the City should focus on empty lots rather than purchasing buildings, and that private streets should not be acquired by the City.

Concerns of Residents

In addition to input from the residents on the study objectives, concerns were expressed.

Traffic-Related

Many concerns related to traffic were voiced, including an increase in accidents, increase in travel speeds, and higher traffic volumes. Residents were concerned that an increase in traffic could reduce the privacy and tranquillity of the neighborhoods, mainly due to increased noise and headlights. An increase in traffic congestion was voiced as a concern, and an increase in air pollution that could accompany the congestion.

Property Value

Another concern of the residents was that implementation of these recommendations could have a negative effect on property values.

Crime

Residents were concerned that an increase in access could have a negative effect on the crime rate in their neighborhoods.

Concerns of Commercial Properties

Many of the initial public meetings were targeted at gathering input from commercial property owners. These owners added additional concerns as follows: access to parking, design standards, and costs.

Access to Parking

The study should encourage connections that provide alternative access to commercial properties, or improved access to parking. Parking interconnections or alternative access should avoid a reduction in parking spaces. Connections should be provided as close to commercial properties as possible serving the commercial areas only.

Design Standards

Designs of interconnections for backside access and parking lots should be allowed even though they may not necessarily meet City street standards. Highway improvements along SR89A should incorporate more acceleration and deceleration lanes, the proposed median will negatively impact businesses.

Costs

The City should form special improvement districts to pay for the proposed improvements. Recommendations should avoid taken existing buildings, and expensive vacant commercial land.

Actual resident responses, both verbal and written, are on file in the City of Sedona Department of Community Development.

Public Recommendations

Consider Bicycle and Pedestrian Corridors

The residents indicated that implementation of bicycle and pedestrian facilities should be considered where ever possible, and that the study should focus on transit as a long-term solution.

Highway Improvements

A significant number of residents want highway improvements to be made first to assess their affect on traffic congestion prior to implementing off-highway improvements.

Incorporate Methods to Reduce Speed

Many of the residents expressed concern that interconnections between neighborhoods would increase travel speeds on existing streets. Suggestions were made that the City adopt policies to manage travel speeds. The City should evaluate the use of speed bumps, rumble strips, better enforcement, and signing.

Screening of Connections

Following the completion of the inventory of possible connections and the initial public meetings, the process of evaluating the proposed connections began. The evaluation process was completed as a two-step approach. First, an initial screening of the ideas was accomplished. The objective of the screening process is to review each proposed element and determine if the connection should be considered for a more detailed evaluation. The conclusion of the screening process recommends which proposed connections should be carried forward and which ones are no longer to be considered for implementation. Those that are eliminated from further consideration are considered to have a fatal flaw, meaning there is an impact or concern identified with the particular connection that would be unreasonable compared to the benefits that could be obtained.

Tables 1 and 2 highlight the results of the connection screening, and those connections that are recommended for further evaluation are indicated. Those connections that are considered to contain a fatal flaw are shown, and a brief comment on the fatal flaw included. A more detailed description of the results of the screening follows.

Fatal Flaw Analysis

North Side links

N-1, N-2, and N-3 were recommended for further evaluation. No fatal impacts or concerns were envisioned with these connections at this point in the study process.

Connections N-4 and N-5 both would fulfill similar objectives by creating a connection between Roadrunner Drive and Dry Creek Road. The N-4 connection significantly affects several residential homes, however the N-5 connection is located near commercial properties. The N-5 connection could provide the residents of the Roadrunner Rancho Subdivision access to the signal at Dry Creek Road similar to the N-4 connection. Additionally, the N-5 connection could serve as backside access to commercial properties near SR89A. Comments from the initial public meetings indicated that connections should be located near commercial properties where possible, and that care should be given to avoid affecting the existing character of the neighborhood. When compared to the benefits offered by connection N-5, the N-4 connection does not sufficiently meet the objectives of this study and could include significant impacts to existing residential properties. The N-4 connection was not recommended for further evaluation, however the N-5 connection was carried forward.

City of Sedona

West Sedona North/South Alternative Routes

CH2MHILL

Initial Screening of Connections

Table 1 - Connections North of SR89A

Further Evaluation	Connection Number	Description of Fatal Flaw	Eliminated
✓	N-1		
✓	N-2		
✓	N-3		
	N-4	Connection N-5 would have less residential impacts and could also serve as an alternative commercial connection.	✓
✓	N-5		
	N-6	Redundant connection, Southwest Drive is one block north and provides same movements	✓
✓	N-7		
	N-8	Redundant connection, Mule Deer Road is 1500' north and provides same movements. Would require acquisition of a portion of Madole. Significant topographical constraints and impacts to Crimson View subdivision.	✓
✓	N-9		
	N-10	Connection N-11 would have less residential impacts. Acquisition of a portion of Goodrow Drive and Finke Drive would be required.	✓
✓	N-11		
	N-12	Major commercial and residential right-of-way acquisition required. Impacts to several existing structures.	✓
	N-13	Significant right-of-way impacts and existing structures. Extreme topographical constraints.	✓
	N-14	Removal of 2-3 Homes required, Another alternative (N-15) is available with less impacts	✓
✓	N-15		
✓	N-16		
✓	N-17		
✓	N-18		
✓	N-19	Significant Impacts to Homes on Santa Barbara Road, Section from Tralmari Drive to Posse Ground Road should be further evaluated.	✓
	N-20	Redundant connection, Carruth Drive provides same movements	✓
	N-21	Redundant connection, Carruth Drive provides same movements	✓
	N-22	Significant sight distance issues on Coffee Pot Road with existing intersections. Another alternative (N-15) is available with less impacts.	✓
	N-23	Significant sight distance issues on Coffee Pot Road with existing intersections. Iris Lane alternative would impact existing structures, another alternative (N-15) is available with less impacts.	✓
	N-24	This connection could significantly impact USFS trail linkages and wilderness areas. Impacts to several residential parcels.	✓

City of Sedona

West Sedona North/South Alternative Routes

CH2MHILL

Initial Screening of Connections

Table 2 - Connections South of SR89A

Further Evaluation	Connection Number	Description of Fatal Flaw	Eliminated
✓	S-1		
	S-2	Acquisition of parcels with existing homes required, impacts to private gated community.	✓
✓	S-3		
✓	S-4		
	S-5	Redundant connection, Arroyo Drive in one block south and provides same movements	✓
	S-6	Redundant connection, Arroyo Drive in one block north and provides same movements	✓
	S-7	Existing right-of-way along proposed route and throughout the subdivision is substandard. Impacts to existing homes will not outweigh the benefits predicted.	✓
✓	S-8		
✓	S-9		
	S-10	Significant Impacts to Residential Properties on Thunderbird Drive and Commercial Properties along SR89A	✓
	S-11	Significant impacts to adjacent high density residential units.	✓
✓	S-12		
✓	S-13		
✓	S-14		
✓	S-15		
✓	S-16		
	S-17	Removal of 2 homes required for construction	✓
	S-18	Significant Impacts or removal of homes along the connection	✓
✓	S-19		
✓	S-20		
✓	S-21		
	S-22	Implementation of this connection would require the removal of an existing home	✓
	S-23	Implementation of this connection would require the removal of 4 existing homes	✓
✓	S-24		
✓	S-25		
	S-26	Significant Impacts to homes along the connection	✓

The N-6 connection proposed a new connection between Sinagua Drive and Southwest Drive. This connection would serve as backside access for commercial properties along SR89A. An objective of this study was to provide alternative routes to using the highway. The majority of the properties affected along this connection currently have alternative choices to the highway. Cardinal Lane and Aria Street offer drivers options to using SR89A. The N-6 connection was not recommended for further evaluation because it was envisioned that implementation would be costly and the benefits realized would be minimal at best.

The N-7 connection would provide access to land currently not developed, and therefore no significant impacts were envisioned. This connection was recommended for further evaluation.

The N-8 connection proposed connecting the Harmony Hills area with the Crimson View Subdivision. This would allow residents of the Harmony Hills area to access the Safeway Plaza without using the highway, or access SR89A through the Rodeo Road traffic signal. Additionally, residents of the "residential island" off Madole Road would be provided these same alternative routes. The most significant impact of this connection was that the City would be forced to acquire Madole Road from the highway to the proposed connection. This acquisition was estimated to be a significant cost to the City. In return for this large cost the City would receive minimal benefits. Sanborn Road and Mule Deer Road currently serve as connections between the Harmony Hills area and Rodeo Road. Therefore the only benefit was giving the "residential island" new alternative routes. The "residential island" could be served by a connection nearer to the highway, reducing the length of Madole Road that would need to be acquired. This connection was not recommended for further evaluation.

The N-9 connection would provide access to land currently not developed, and could serve as an alternative route for the "residential island" locate along Madole Road. This connection was recommended for further evaluation.

Connections N-10 and N-11 both would fulfill similar objectives by creating a connection between Goodrow Lane and Rodeo Road. The N-10 connection would require acquisition of nearly the entire length of Goodrow Lane by the City in addition to acquisition of Finke Drive. The N-11 connection could provide the residents of the Goodrow Subdivision access to the signal at Rodeo Road similar to the N-10 connection, and the N-11 connection could serve as backside access to commercial properties near SR89A. Comments from the initial public meetings indicated that connections should be located near commercial properties where possible, and that care should be given to avoid impacting the existing character of the neighborhood. When compared to the benefits offered by connection N-11, the N-10 connection does not sufficiently meet the objectives of this study and would include much higher acquisition costs than N-11. The N-10 connection was not recommended for further evaluation, however the N-11 connection was carried forward.

The N-12 connection would fulfill a similar objective to the N-10 and N-11 connections by offering the "residential island" along Goodrow Lane access to a signalized intersection. The N-12 connection includes two alternative alignments, either extending Yavapai Drive or extending Contractors Road. Each alternative would have similar impacts. Neither street is currently owned by the City and therefore would have to be acquired. The existing streets in question are narrow and do not meet the City's current standards. Widening of

these streets could have significant impacts on the adjacent businesses. This connection was not recommended for further evaluation because it was envisioned that the high cost of street acquisition, and significant impacts to commercial enterprises, would severely overshadow the benefits given to the residents of the Goodrow Subdivision.

Connections N-13, N-14, N-15, N-16, N-22, and N-23 can be grouped together as having similar objectives. These connections all propose providing a link between the Sedona West Subdivisions and the Coffee Pot Subdivision. A connection between these two areas can provide new options for residents in the Sedona West Subdivisions wishing to access the popular commercial areas at the Bashas Center and the Safeway Plaza, and provides alternatives for Coffee Pot residents and others west of Coffee Pot Drive to access West Sedona School and Posse Ground Park. Any of these connections may have a beneficial effect on the operations of SR89A, especially since the section containing the highest volume of traffic is between Mountain Shadows Drive and Coffee Pot Road.

- The N-13 connection would require right-of-way from the Bashas Shopping Center to avoid the purchase of existing homes. This acquisition could include significant costs to the City. Additionally implementing a roadway as proposed would necessitate extreme topographical constraints. This proposed connection was not recommended for further evaluation based on the extreme cost expected for implementation.

- The N-14 connection would require a minimum displacement of two houses, and significant impacts would be expected to homes adjacent to the proposed alignment. An objective that was clearly communicated at the public meetings is that any proposal should avoid the acquisition of existing homes. This connection was not recommended for further evaluation based on these impacts.

- The N-15 and N-16 connections are proposed to be made through undeveloped properties, and no serious constraints to implementation were expected. The N-16 connection was proposed to traverse national forest lands, and this could complicate the implementation, but not to the level to consider this a fatal flaw. Both of these connections were recommended for further evaluation.

- The N-22 connection was proposed to traverse properties occupied by homes. It was hoped that impacts to existing homes could be avoided, but these relatively minor impacts were not considered fatal flaws. However the Grounds Drive intersection with Coffee Pot Road has significant sight distance problems; adding traffic to this situation was considered a fatal flaw. This connection was not recommended for further evaluation.

- The N-23 connection has similar attributes as the N-22 connection. The impacts to adjacent homes are similar, and in the case of the Iris alignment, one home would need to be removed. The N-23 connection (Grounds alignment) sends traffic to the same intersection with poor sight distance as the proposed N-22 connection. The N-23 (Iris alignment) would send traffic to the Iris/Coffee Pot intersection where sight distance is also a problem. This connection was not recommended for further evaluation.

No significant impacts were envisioned to be associated with the proposed connections N-17 and N-18 that could be considered fatal flaws. Both of these connections were recommended for further evaluation.

The N-19 connector was proposed to give backside access to commercial properties along SR89A. To implement this connector, two homes along Santa Barbara Road would have to be taken, or severely impacted. The Sedona Highway Corridor Assessment included recommendations to interrupt the continuous median through this section, specifically to avoid implementing this connector. The impacts to existing homes, and the unnecessary expense based on the raised median recommendations were considered fatal flaws to implementing this connection. However, a small section of this proposal should be considered for implementation (from Tramari Drive to Posse Ground). Residents of the Tramari Mobile Home Park would have access to the Posse Ground/SR89A intersection (and signal, if implemented).

Both the N-20 and N-21 connections were not recommended for further evaluation. The objectives of this study were to determine if the costs associated with a proposed connection were reasonable compared to the benefits envisioned. In the case of these two connections none of the study objectives would be achieved by implementation. Residents that would be served by these connections already have access to signalized intersections at either Soldiers Pass or Mountain Shadows Drive. Neither the San Patrico Estates or the Vista Montana Subdivision are "residential islands" in need of a second exit location and an alternate connection exists via Carruth Drive. Additionally, the connections would not provide backside access to commercial properties along SR89A. Because there are no benefits envisioned that match the study objectives, these connections were considered to have a fatal flaw.

The N-24 connection would give the residents along the far northern reach of Soldiers Pass Road an alternative route to the commercial areas along SR89A by linking them to the Sanborn/Thunder Mountain corridor via Farmers Brothers Drive. The impacts to the national forest lands the proposed connection traverses could be significant since topography is variable. Secondly there is a high cost associated with the acquisition of Cline Road, currently privately owned. The combination of the significant impacts to the national forest, and the high costs to provide benefit to a limited number of residents was considered a fatal flaw.

South Side links

The S-1 connection was not envisioned to have any impacts that should be considered a fatal flaw, and was recommended for further evaluation.

The S-2 connection was proposed to cross two residential lots, both containing existing homes. During the initial public meetings, residents voiced their opposition to the removal of existing homes. In this situation existing homes would be removed only to provide a second exit for the Foothills South Subdivision for emergency situations. The poor results of the comparison of impacts to benefits was considered a fatal flaw.

The S-3 and S-4 connections were proposed to link residents to the signalized intersection at Arroyo Pinõn and SR89A. Both connections were proposed across vacant land, and no other significant impacts were envisioned.

Both S-5 and S-6 proposed implementing new connections between the Keller Tracts and Arroyo Pinõn Subdivisions. However an existing connection was available between these areas using Arroyo Drive. The public declared during the initial meetings that proposing new connections where existing connections already exist should be avoided, and that the

cost effectiveness of these proposals should be questioned. Neither of these connections were recommended for further evaluation.

The S-7 and S-8 connections were proposing new links between the Keller Tracts and Settler Rest Subdivisions. There were no locations that can be proposed between these subdivisions that would not greatly impact existing homes because the number of vacant lots in this area is rather limited. The S-7 connection proposed to use Point Drive. This is a narrow, existing roadway with a deep drainage ditch on one side. The current roadway does not meet current City guidelines and a recommendation for widening should be considered. Widening would involve a significant cost to close the existing drainage facility. The proposed S-8 connection impacts adjacent homes, however these are not considered a fatal flaw. The S-7 connection was not being recommended for further evaluation, however the S-8 connection was.

The S-9 connection was envisioned to be implemented at the time the vacant land it traverses is developed. There are no fatal impacts envisioned, and this connection was recommended for further evaluation.

The S-10 connection was proposed to pass between commercial properties along SR89A and existing homes within the Thunderbird Hills Subdivision. There is very little room available for this connection and therefore buildings would have to be acquired. This connection does not adhere to the objectives of this study. No new access to a signalized intersection would be provided, and the alternate route offers no advantages to the residents. This connection was not recommended for further evaluation.

The extension of Northview Road to Sunset Drive was proposed as connection S-11. This proposal includes passing a new roadway through a narrow area of the Anasazi Village Development, an area of high density housing. To pass a roadway through this area and provide desirable design standards, at least two of the existing structures would have to be removed. Both Northview and Sunset Drive offer existing traffic signals at SR89A, and therefore the trip type that this connection would be servicing is an alternative route for the residents to access the desirable commercial areas at Coffee Pot Road and Shelby Drive and the highway. The impacts required to implement this connection compared to the benefits envisioned was considered a fatal flaw.

The S-12 connection was proposed as a long roadway stretching from Stanley Steamer Drive to Racquet Road. This connection would link numerous subdivisions together similar to the existing Sanborn/Thunder Mountain corridor north of SR89A. There were no impacts envisioned that are considered fatal flaws.

The S-13 connection was envisioned to be implemented when the vacant land it traverses is developed. There are no fatal impacts envisioned, and this connection was recommended for further evaluation.

The S-14 connection was a relatively low impact alternative for the proposed extension of Northview Road (S-11). This connection was recommended for further evaluation.

Connections S-15 through S-26 included numerous ideas to improve access between the Northview, Inspirational View, Oak Creek, and Saddle Rock Subdivisions. Five of these connections are not recommended for further evaluation, because they all require the

removal of existing homes. These connections include S-17, S-18, S-22, S-23, and S-26. The remaining connections were carried forward for further evaluation.

Traffic Modeling

2010 Base Traffic

The Sedona Traffic Model was originally produced to support the Sedona Highway Corridor Assessment effort that was completed in December 1996. The model was calibrated against traffic counts that were taken in 1994 and 1995, and then 2010 traffic volumes were estimated. Many assumptions are required to estimate future traffic volumes, including a clear picture of the future land use, changes in the roadway network, and changes in traffic patterns.

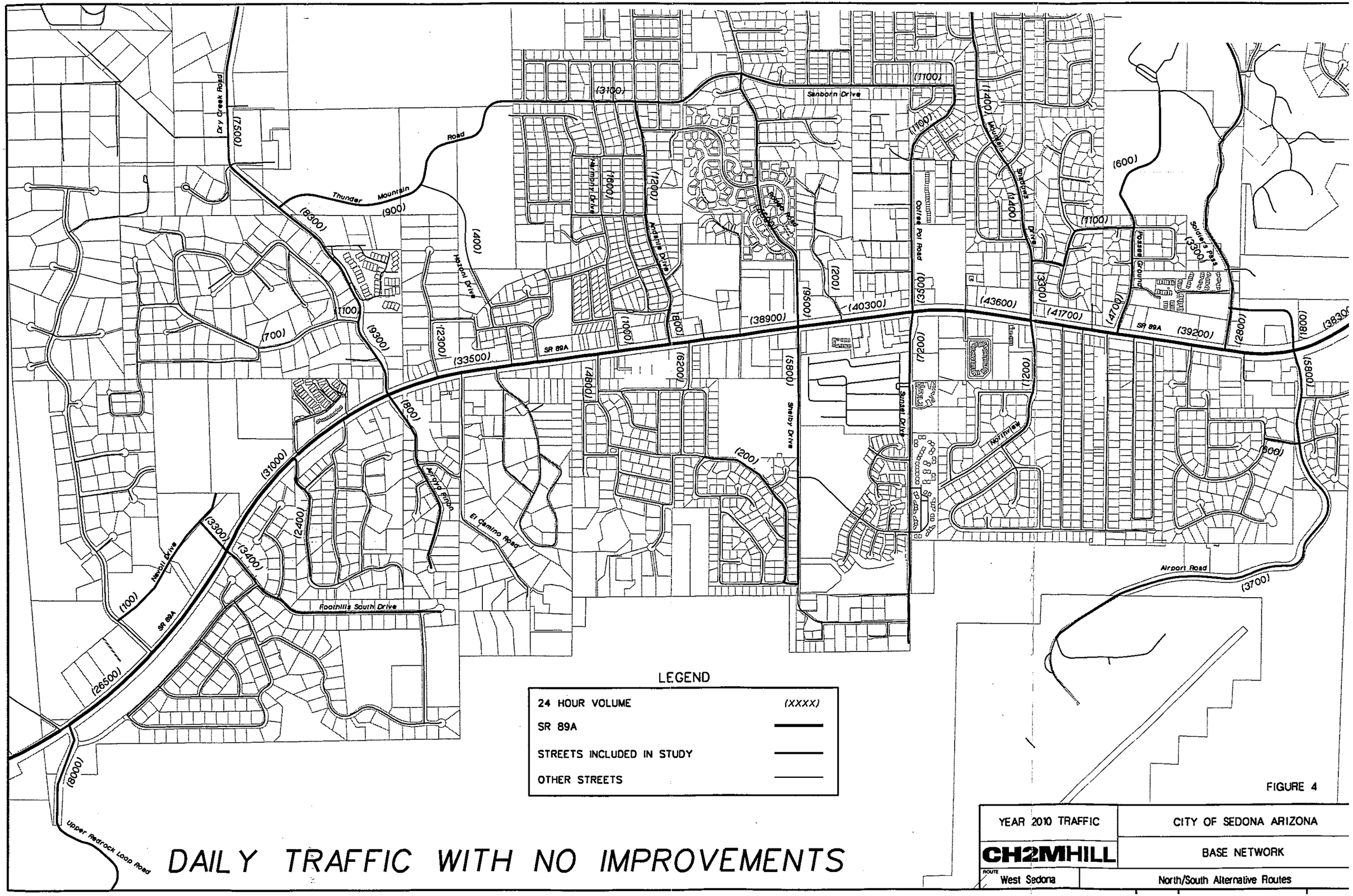
The Sedona Traffic Model was used to evaluate the traffic impacts and benefits of the proposed improvements. The proposed improvements must be evaluated against a base condition, the 2010 traffic model for the Sedona Highway Corridor Assessment was used as the base condition, with a few modifications. These modifications reflect better understanding of future land use, recent changes in the roadway network, and changes in traffic patterns based on the recommendations of the corridor assessment.

The 2010 Traffic Model prepared for the corridor assessment assumed the areas outside the City limits would continue to grow at a constant rate. At the time this evaluation was being prepared a proposed new development, the Seven Canyons, had been identified along Dry Creek Road north of the City limits. This anticipated development was added to the land use predictions in the traffic model.

At the time the traffic model was run for the corridor assessment, the proposed developments of Thunder Mountain Ranch and Crimson View had been identified however final site plans were not available. In preparation for traffic modeling for this study, the roadways systems and lot layouts had been finalized or constructed. The traffic model was refined to reflect this better information. Roadway connections were added to the model that had not been previously modeled including, the extension of Hozoni Drive to Thunder Mountain, and the extension of Mule Deer Road to Rodeo Road.

The Sedona Highway Corridor Assessment recommended that several operational improvements be added to the SR89A corridor. One of the improvements includes the addition of a raised median system. The recommended medians limited the left turns that could be made at several intersections with the highway. The Sedona Traffic Model was modified to reflect the recommendations in the corridor assessment by eliminating appropriate left turn maneuvers, forcing those trips to find another intersection. Additionally, left turn penalties were applied to those intersections that are not planned to have traffic signals. This will make the signalized intersections more attractive to trips accessing SR89A.

The Sedona Traffic model was run with the modifications discussed above, and revised 2010 traffic volumes are displayed in Figure 4.



LEGEND

24 HOUR VOLUME	(XXXX)
SR 89A	———
STREETS INCLUDED IN STUDY	———
OTHER STREETS	———

DAILY TRAFFIC WITH NO IMPROVEMENTS

FIGURE 4

YEAR 2010 TRAFFIC	CITY OF SEDONA ARIZONA
CH2MHILL	BASE NETWORK
ROUTE West Sedona	North/South Alternative Routes

All of the adjustments to the traffic model as described above, were accomplished to help ensure that the traffic predictions on the proposed links within this study are reliable. The following differences are noted between the 2010 traffic volumes predicted for the corridor assessment and the Base Condition for this study:.

Due to the additional land use, added to reflect the Seven Canyons development, 2010 traffic volumes on Dry Creek Road increased nearly 50% over previous predictions. However the extension of Hozoni Drive to Thunder Mountain the traffic predicted on Thunder Mountain fell from 1500 vehicles to 900.

The left turn prohibitions and penalties added to reflect the installation of raised medians along SR89A, increased traffic on some of the north-south streets that include traffic signals. The most dramatic increase is Rodeo Road, attracting traffic from the Harmony Hills subdivisions. Traffic volumes predicted on Sanborn increase to 3100 vehicles between Harmony Hills and Rodeo Road in response to left turns being eliminated at the Harmony Drive intersection, and penalized at the Andante intersection with SR89A. Minimal traffic increases are noted on Mountain Shadows, Posse Ground, and Airport Road.

Traffic with Neighborhood Links

The entire cadre of neighborhood links were coded into the traffic model. All of the neighborhood interconnections were coded into the traffic model with a travel speed of 20MPH. This was done to reflect the design constraints that many of the connections will be faced with, and also the traffic model will not treat these connections as favorable routes since the running speed on these connections is lower than most of the other routes available.

The 2010 traffic volumes reported by the traffic model are shown on Figure 5. Slight traffic reductions are predicted on SR89A. The section of the highway with the highest traffic volumes, Coffee Pot Road to Mountain Shadows Drive, is estimated to obtain nearly a 7 percent reduction in traffic from the base condition. Similar traffic reductions are indicated along the highway spanning from Soldiers Pass Road on the east to Foothills South Drive in the west.

The traffic model is indicating that traffic patterns within the various neighborhoods vary with the implementation of the interconnections. Navoti Drive, connections N-1, N-2, and N-3, is shown to collect a minimal amount of traffic. An assumption was made that a traffic signal would be installed at the Foothills South Blvd/SR89A location, and the model has assigned a significant portion of the traffic associated with the commercial properties along SR89A to this signal location. With access control along SR89A, the traffic along Navoti Drive should be much higher along the backside of the commercial properties. The Sedona Traffic Model does not model trips to individual properties, and this is why traffic volumes on Navoti Drive seem low.

Connection N-5, White Bear Road (Dry Creek to Roadrunner) shows a high volume of traffic diverting away from the various unsignalized intersections, such as Roadrunner, Tortilla, and Southwest, to the traffic signal at Dry Creek Road. An eight percent (8%) reduction in traffic volume on the highway is predicted through this section from the base condition.

DAILY TRAFFIC WITH INTER-NEIGHBORHOOD CONNECTIONS

Links considered to have fatal flaws have not been included.

LEGEND

24 HOUR VOLUME	(XXXX)
SR 89A	———
STREETS INCLUDED IN STUDY	———
OTHER STREETS	———

FIGURE 5

YEAR 2010 TRAFFIC	CITY OF SEDONA ARIZONA
CH2MHILL	NEIGHBORHOOD LINKS
ROUTE West Sedona	North/South Alternative Routes

The N-11 connection reports a volume of 1,700 vehicles per day, indicating that the traffic model is using this connection to divert trips around the Shelby/SR89A traffic signal, and into the commercial attractions within the Safeway Plaza. The N-15 connection, Coffee Pot Extension, is attracting trips destine to commercial properties as well. Traffic is predicted to increase on Coffee Pot north of the Bashas Shopping Center, but no increase is predicted at SR89A. This indicates that residential trips are using the connection to access the commercial attractors along Coffee Pot and north of the highway. An increase in traffic of 200 vehicles per day is shown on the Sanborn/Thunder Mountain corridor indicating that additional trips are using this corridor over the highway with the addition of the N-15 connector. A reduction in traffic on Mountain Shadows, Posse Ground, and Soldiers Pass at SR89A indicates that the new trips on the Sanborn/Thunder Mountain corridor are residential trips diverting from the highway.

The S-1 connection, El Camino Grande extension, is assigned a small volume of traffic that is accessing SR89A at Arroyo Pinõn instead of traveling through the Juniper Knolls area. However the S-4, Arroyo Pinõn extension, was assigned no traffic. The Racquet Road to Stanley Steamer connection (S-12) is assigned up to 1000 vehicles per day. The traffic model has increased the traffic at the Foothills South intersection with SR89A, this leads us to believe that the model is assigning traffic through the Foothills South development to access the highway.

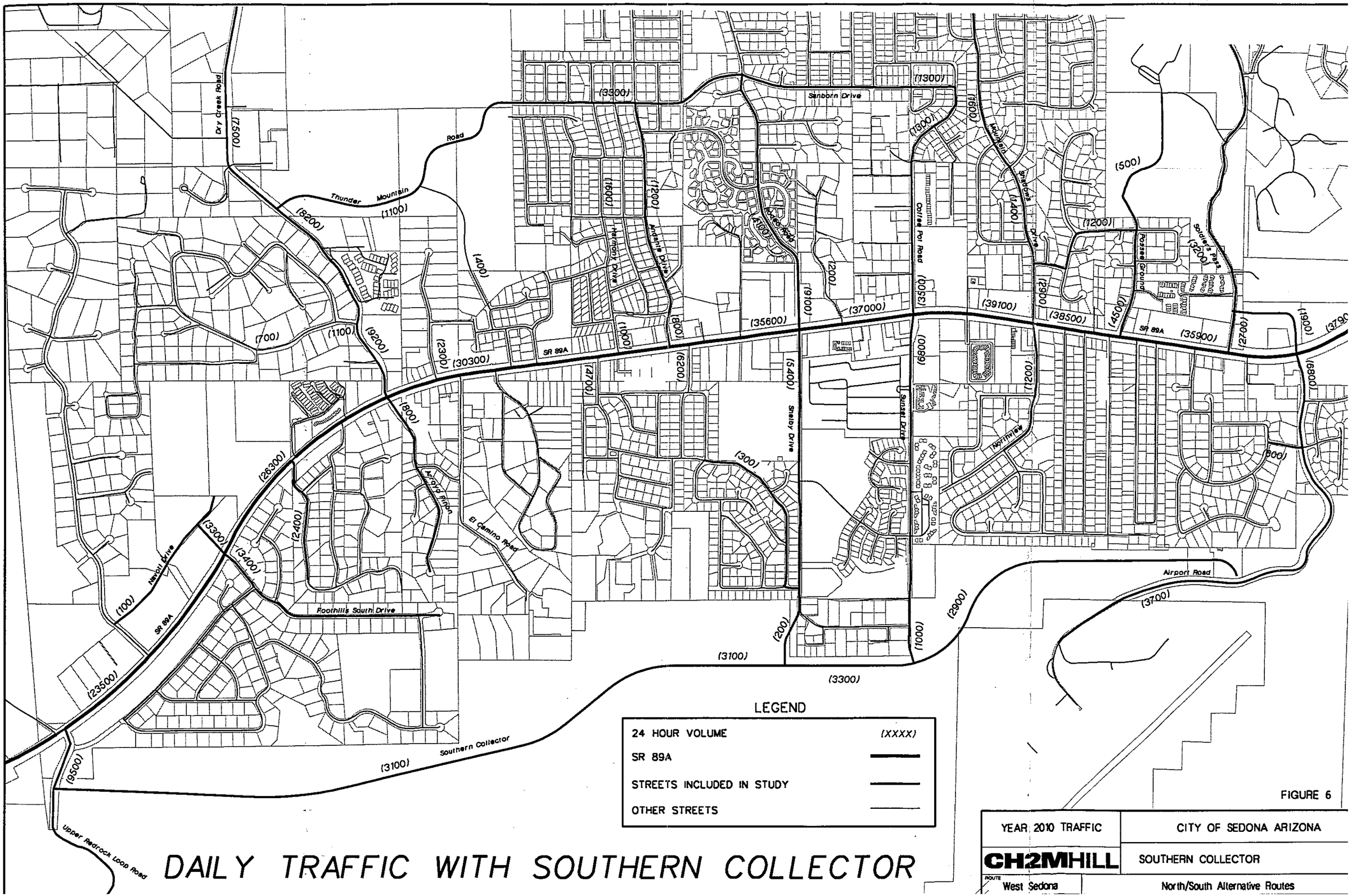
The Sedona Highway Corridor Assessment includes a raised median be constructed along SR89A, and recommends that turns be limited at the Stutz Bearcat intersection. The traffic model was refined to reflect the recommendations of the corridor assessment, and the S-13 connection was included in this study to provide an alternative route to the Shelby/SR89A intersection. The traffic model has assigned 1000 vehicles per day to the Whippet Way to Shelby connection (S-13) and reduced the projected traffic at the Stutz Bearcat intersection.

The combination of the S-14, S-24, and S-25 connections create an indistinct route from Airport Road to Sunset Drive. The increase in traffic predicted on Airport Road, Saddlerock Circle Drive, and the decrease in traffic on Sunset at SR89A show that there is a volume of traffic (400-600 vehicles per day) that may be using this combination of connections to avoid the highway. However, a reduction in traffic on Northview and traffic volumes on the connections estimated at 1000-1100 vehicles per day indicate that an equal amount of neighborhood interconnecting traffic is being modeled on these connections.

Connections S-19, S-20, and S-21 have been recommended for further evaluation, however the traffic model is not detailed enough to predict traffic volumes on these connections.

Traffic with a Southern Collector

A collector type roadway connection from Upper Red Rock Loop Road to Airport Road (SC-B) was added to the traffic model. The anticipated daily traffic for the year 2010 is displayed in Figure 6. The design of this collector for this model run was primarily as a bypass facility for the highway. Connections to the facility are only provided at Sunset Road and Shelby Drive.



LEGEND

24 HOUR VOLUME	(XXXX)
SR 89A	———
STREETS INCLUDED IN STUDY	———
OTHER STREETS	———

DAILY TRAFFIC WITH SOUTHERN COLLECTOR

FIGURE 6

YEAR 2010 TRAFFIC	CITY OF SEDONA ARIZONA
CH2MHILL	SOUTHERN COLLECTOR
ROUTE West Sedona	North/South Alternative Routes

The anticipated volumes on the Southern Collector are about 3000 vehicles per day. This results in a predicted reduction of 8% to 10% on SR89A from the base condition. The most critical link on the highway, from Coffee Pot Road to Mountain Shadows Drive, would see a 10% reduction, as compared to 7% when the neighborhood links were added to the model.

A specific traffic model run was not completed for the alternative southern collector (SC-A), the traffic that this collector is predicted to carry would be equal to that predicted for connection S-12. Therefore the traffic predicted to use the southern collector SC-A is 1000 vehicles per day.

Traffic with All Proposed Improvements

The proposed neighborhood links and the southern collector street were combined into one model to estimate the impacts of both systems together on the projected traffic.

Very little change in the traffic numbers is reported when the two systems are combined as shown in Figure 7. The southern collector is predicted to carry around 3000 vehicles per day, as reported from the previous model. Slight increases and decreases in the volumes of traffic predicted on SR89A are seen.

Conclusions

Neighborhood Links

The traffic models indicate that the neighborhood connections would add some flexibility in route choice to the residents of West Sedona. Most of the links are projected to attract less than 2,000 vehicles per day. This number equates to less than 3 vehicles per minute in the peak hour of the day, and significantly less would be expected during other times.

The fact that traffic volumes predicted on existing roads does not significantly change, indicates that the connection of neighborhoods will not radically change traffic patterns in West Sedona but will give residents new options to choose from.

Collector Routes

The conclusion made from the model results is that the high expense and impacts of implementing a roadway around the south side of West Sedona may not produce significant benefits over implementing the proposed neighborhood connectors.

DAILY TRAFFIC WITH SOUTHERN COLLECTOR AND INTER-NEIGHBORHOOD CONNECTIONS

Links that are considered to have fatal flaws have not been included.

FIGURE 7

YEAR 2010 TRAFFIC	CITY OF SEDONA ARIZONA
CH2MHILL	NEIGH. LINKS AND S. COLLECTOR
ROUTE West Sedona	North/South Alternative Routes

Evaluation of Connections

Evaluation Categories

Eight evaluation categories were selected and the categories were divided into a group of Primary Criteria and Secondary Criteria as follows:

Primary Criteria

- **Traffic Demand.** What is the anticipated 24-hour volume using the connection?
- **Right-of-Way Impacts.** What would be required to obtain the property required for the connection?
- **Neighborhood Support.** What type of input has been received from the public about this connection?
- **Safety Needs.** How does this connection effect the safety of the traveling public and the residents of the City of Sedona?

Secondary Criteria

- **Environmental Impacts.** What types of environmental concerns are associated with the connection?
- **Implementation.** How complicated would it be to implement the connection?
- **Funding Sources.** Is the City of Sedona the only possible funding source for the construction of the connection?
- **Multi-Modal Opportunities.** Does the location of the connection provide opportunities for travel by other modes of transport than the automobile?

Evaluation Matrix Scoring

One of three scores are assigned to each proposed connection for each evaluation category. These scores include, POSITIVE, NEGATIVE, and NEUTRAL. In general, the three scores are defined as follows;

POSITIVE - the impacts due to the connection are anticipated to be inferior to the benefits derived.

NEGATIVE - the impacts due to the connection are anticipated to overshadow the benefits derived.

NEUTRAL - the impacts due to the connection should be appropriate for the level of benefits derived.

The scores assigned to the matrix are based on engineering judgment from the preliminary level of information available. Each connection contains unique benefits and impacts to the

immediate area and the City as a whole. Explanations of rough guidelines that were followed when assigning scores are included for each category as follows.

Traffic Demand

Is the connection expected to remove traffic volume from SR89A?

Does the connection allow for inter-neighborhood travel that could only be done previously by using SR89A?

Does the connection allow for movements to signalized intersections on SR89A?

Does the connection send a significant amount of traffic onto a roadway that is a cul-de-sac today?

Is the predicted traffic volumes in excess of what should be anticipated on a neighborhood street?

Right-of-Way

Will the connection provide better access to adjacent properties?

Are the properties that the connection traverses vacant?

Will there be a significant number of property owners effected by the acquisition of land for the connection?

Will the land required for the connection leave unusable parcels of land following acquisition?

Can the connection be incorporated into redevelopment of the parcels it traverses?

Does the connection follow an existing easement, such as sewer or drainage?

Neighborhood Support

Have there been significant numbers of positive or negative comments pertaining to this connection?

Safety Needs

Does this connection create a new intersection location along an existing street?

Does the connection provide movement to a signalized intersection?

Does the connection route higher volumes past a significant number of homes?

Will the connection allow for the implementation of raised medians along SR89A?

Can existing intersections with SR89A be closed due to the location of this connection?

Does the connection provide an alternative route to an existing route that has safety problems?

Will the design of the connection violate any design standards?

Environmental Impacts

Will the connection increase traffic noise levels in front of a significant number of homes?

Will the connection fill over an existing drainage wash?

Does the connection reduce traffic noise levels in front of a significant number of homes by offering an alternative route?

Are there any significant impacts to existing flora or fauna?

Implementation

Can this connection be incorporated into redevelopment plans?

Does the connection have to be combined with other projects to obtain the anticipated benefits?

Funding Sources

Can this connection be funded by developers?

Is the level of funding required for this connection within the means of the City?

Multi-Modal Opportunities

Will the connection link neighborhoods together that were otherwise only connected by using SR89A?

Does this link provide a better route to destinations typical of pedestrians or bicyclists, such as parks, schools, and libraries?

Collector Routes

Two possible collector routes south of SR89A were evaluated, and are shown on Figure 3. The first route (SC-A) would use Foothills South Blvd, and construct an extension of this route to connect with Stanley Steamer Drive. Connections would be made at Juniper and El Camino Road. This connection would give the Foothills South, Juniper Knolls, and Keller Tracts Subdivisions access to the commercial areas located on the highway at Shelby Drive and Coffee Pot Road without using SR89A.

The second collector route evaluated would be a completely new alignment (SC-B) beginning at Upper Red Rock Loop and continuing east to Airport Road. This alignment is also shown on Figure 3. The evaluation is highlighted in Table 3.

City of Sedona

West Sedona North/South Alternative Routes

Evaluation of Connections

Table 3 - Southern Collector Alternatives

SOUTH	***Primary Criteria***				***Secondary Criteria***			
Connection Number	**Traffic Demand**	**Right of Way Impacts**	**Neighborhood Support**	**Safety Needs**	**Environmental Impacts**	**Implementation**	**Funding Sources**	**Multi-Modal Opportunities**
SC-A	−	−	−	○	○	○	−	+
SC-B	○	○	○	○	−	−	−	+

− **NEGATIVE - Impacts due to the Connection are anticipated to overshadow the benefits derived.**

\+ **POSITIVE - Impacts due to the Connection are anticipated to be inferior to the benefits derived.**

○ **NEUTRAL - Impacts due to the Connection should be appropriate for the level of benefits derived.**

Collector route SC-A would send a significant amount of new traffic through the Foothills South Subdivision. It would require the acquisition of a significant amount of new right-of-way by the City, mostly pertaining to the privately owned Foothills South Drive, and the community has voiced strong opposition to this alignment. These categories were scored as negative for this alternative. The right-of-way for the second collector route (SC-B) would be comprised mostly of national forest lands, however a new roadway through this area would include significant environmental impacts. Implementation of this corridor could not be incorporated into development activities, and benefits of the corridor would not be realized until the entire corridor was constructed. This is an "all or nothing" situation and could not be implemented over time in small segments.

North Side Connections

A matrix containing evaluation scores for the remaining north side connections is shown as Table 4. The matrix scores were created based on engineering judgment, input for City of Sedona staff, and public input.

Connections that scored more positive include connections N-1, N-2, N-7(SR89A) and N-15. Those that score more negative include connections N-16 and N-17.

South Side Connections

A matrix containing evaluation scores for the remaining south side connections is shown as Table 5. The matrix scores were created based on engineering judgment, input for City of Sedona staff, and public input.

Connections that scored more positive include connections S-1, S-9, S-13, and S-24. Those that score more negative include connections S-3, S-4, S-8, S-12, and S-19.

Recommendations

The recommendations from the evaluation matrix are displayed in Table 6. Those connections that scored rather positive are designated as higher priority for implementation, those that score relatively negative are recommended to be eliminated from consideration. The remaining connections are recommended for implementation, however not with the high priority assigned the connections that scored more positive.

Several of the proposed connections included alternative alignments, namely N-3, N-7, and N-11. In the case of N-7, the Cantabile alternative ranked rather negative, compared to the SR89A alternative that ranked much more positive. Therefore the SR89A alternative is recommended for implementation, and the Cantabile alternative is not.

Neither of the N-3 or N-11 alternatives scored significantly on the negative side, however, it is appropriate that this study only recommend one alternative for implementation. The Kachina alternative scored more positive than the White Bear variation for the N-3 connection, and therefore the White Bear alternative is recommended to be eliminated from consideration. If the Kachina alternative can not be implemented for some reason, the City may wish to revisit the White Bear option. The same holds true for connection N-11, where the south alternative is recommended for implementation over the north alternative.

City of Sedona

West Sedona North/South Alternative Routes

Evaluation of Connections

Table 4 - Connections North of SR89A

NORTH	***Primary Criteria***				***Secondary Criteria***			
Connection Number	**Traffic Demand**	**Right of Way Impacts**	**Neighborhood Support**	**Safety Needs**	**Environmental Impacts**	**Implementation**	**Funding Sources**	**Multi-Modal Opportunities**
N-1	○	+	+	+	+	+	+	○
N-2	○	+	+	+	+	+	+	+
N-3 (Kachina)	○	○	○	−	○	+	○	○
N-3 (White Bear)	○	−	○	−	○	○	○	+
N-5	+	−	+	+	○	+	−	○
N-7 (Contabile)	−	○	−	−	−	+	+	○
N-7 (SR89A)	○	+	+	○	+	○	+	○
N-9	○	+	○	○	○	−	○	○
N-11 (North)	+	−	○	+	○	+	−	+
N-11 (South)	+	○	+	−	○	+	○	+
N-15	+	+	○	○	○	+	○	+
N-16	−	○	○	−	−	+	○	+
N-17	−	○	−	○	−	+	○	○
N-18	−	+	−	+	+	−	+	+

− **NEGATIVE - Impacts due to the Connection are anticipated to overshadow the benefits derived.**

\+ **POSITIVE - Impacts due to the Connection are anticipated to be inferior to the benefits derived.**

○ **NEUTRAL - Impacts due to the Connection should be appropriate for the level of benefits derived.**

CH2MHILL

City of Sedona

West Sedona North/South Alternative Routes

Evaluation of Connections

Table 5 - Connections South of SR89A

SOUTH	Primary Criteria				Secondary Criteria			
Connection Number	Traffic Demand	Right of Way Impacts	Neighborhood Support	Safety Needs	Environmental Impacts	Implementation	Funding Sources	Multi-Modal Opportunities
S-1	+	○	○	+	○	+	○	+
S-3	−	○	○	○	○	+	○	+
S-4	○	○	−	○	−	+	○	○
S-8	−	−	−	○	○	○	○	+
S-9	○	+	○	+	○	+	+	○
S-12	○	−	○	○	−	○	−	+
S-13	+	+	○	+	+	+	+	○
S-14	○	+	−	○	−	+	○	+
S-19	−	○	−	+	−	−	○	○
S-20	+	○	○	+	+	○	○	○
S-21	○	−	−	+	+	○	○	+
S-24	+	+	○	○	○	+	○	+
S-25	+	+	−	−	−	−	○	+

− NEGATIVE - Impacts due to the Connection are anticipated to overshadow the benefits derived.

\+ POSITIVE - Impacts due to the Connection are anticipated to be inferior to the benefits derived.

○ NEUTRAL - Impacts due to the Connection should be appropriate for the level of benefits derived.

City of Sedona

West Sedona North/South Alternative Routes

Table 6 - Recommendations

CH2MHILL

Connection Number	HIGH PRIORITY FOR IMPLEMENTATION	LOW PRIORITY FOR IMPLEMENTATION	SHOULD BE ELIMINATED FROM CONSIDERATION	COMMENT
N-1	✓			
N-2	✓			
N-3 (Kachina)		✓		
N-3 (White Bear)			✓	Recommended to be eliminated from further consideration because the Kachina Alternative ranked higher. Should be reconsidered if the Kachina Alternative can not be implemented.
N-5		✓		
N-7 (Contabile)			✓	
N-7 (SR89A)	✓			
N-9		✓		
N-11 (North)			✓	Recommended to be eliminated from further consideration because the South Alternative ranked higher. Should be reconsidered if the South alternative can not be implemented.
N-11 (South)		✓		
N-15	✓			
N-16			✓	
N-17			✓	
N-18		✓		Recommended to be included in the plan as a Bike and Pedestrian Facility.
S-1	✓			
S-3			✓	
S-4			✓	
S-8			✓	
S-9	✓			
S-12			✓	
S-13	✓			
S-14		✓		
S-19			✓	
S-20		✓		
S-21		✓		
S-24	✓			
S-25		✓		Recommended to be included in the plan as a Bike and Pedestrian Facility.
S. Collector-A			✓	
S. Collector-B			✓	

Public Participation

During August 1997 a series of public meetings were held in West Sedona to present the recommendations of the evaluation, and to acquire comments. During the second phase of the public involvement process the meetings did not target individual neighborhoods, but instead were geared toward north side residents or south side residents. In general, the public took the opportunity during the second series of meetings to relate concerns instead of giving input to the specific plan presented.

Public Concerns

The majority of concerns expressed by the residents fell into two categories, either concerns related to increased traffic volumes, or concerns over a decreased level of safety.

Residents that attended the meetings voiced concern over an increase in traffic volumes and the potential for disruption to privacy and tranquillity within their neighborhood. Comments gathered stated the concern that an increase in traffic volumes may have negative impacts on crime rates, noise levels, air pollution, and property values.

The most significant safety issue raised by the residents is that of higher travel speeds. The opinion of the residents is that travel speeds have increased dramatically. Higher travel speeds on the Sanborn/Thunder Mountain corridor was a significant topic during the north side meetings. Another safety concern of the residents is that of accidents, the implementation of connections may increase traffic volumes on neighborhood streets, and this may raise the risk of accidents.

Mitigation Recommendations

Input was collected from at the public meetings as to what mitigation methods should be implemented to ease the concerns discussed above.

All options should be considered to control travel speeds. These options should include an increase in the amount of enforcement, or to provide public education to modify driver behavior. Design features that were suggested include speed bumps, rumble strips, stop signs, and utilization of vegetation to slow traffic. Recommended mitigation methods for these concerns are discussed later in this report.

Recommended Plan

The recommended off-highway circulation plan is presented in Figure 8. This plan includes the connections that were recommended for implementation based on the evaluation matrix previously discussed. Included in Figure 8 are predicted 24 hour traffic volumes for the year 2010 of the recommended connections and other key streets within West Sedona.

RECOMMENDED PLAN

NOTE: The S-25 Connection is not being recommended as a roadway connection based on results of the conceptual design.

LEGEND

24 HOUR VOLUME	(XXXX)
SR 89A	
STREETS INCLUDED IN STUDY	
OTHER STREETS	
NON-MOTORIZED PATHS	
RECOMMENDED CONNECTIONS	S-14

FIGURE 8

YEAR 2010 TRAFFIC	CITY OF SEDONA ARIZONA
CH2MHILL	RECOMMENDED PLAN
ROUTE West Sedona	North/South Alternative Routes

Major Features

The recommended plan provides a complete off-highway network for residents on the north side of SR89A. If a person wished to complete a trip from the intersection of SR89A and Airport Road to the intersection of URRL and SR89A without using the highway, it would be possible following the implementation of the plan. However, the route would be very out-of-the-way and the travel time to complete this trip would be significantly greater than using the highway. South of SR89A the recommended plan does not provide links that produce a complete linkage across West Sedona, however, a complete cross town connection was not an objective of this study.

North Side Circulation Plan

The most significant feature of the north side plan is Navoti Drive. This includes connections N-1, N-2, and N-3 and provides a connection between Cultural Park Place and Dry Creek Road as shown in Figure 9. The primary purposes for this connection are first to provide back side access to commercial properties along SR89A. The back side access provided will allow for easy implementation of the raised median system on the highway from URRL to Foothills South Drive. A second purpose of these connections is to provide access to a traffic signal for the residents of the Las Lomas Subdivision. The connection will provide these residents access to the signals at URRL, Dry Creek Road, and Foothills South Drive (if implemented). These connections will also add route flexibility to major destinations such as the Sedona Medical Center, the Library, and the Sedona High School.

Most of Navoti Drive would be implemented as part of the Navoti project as development occurs along its alignment. There are some operational concerns with using Kachina Drive as a connection between Navoti and Dry Creek Road. Kachina Drive currently is a narrow substandard roadway, and widening of the road should be considered. However design standards used for this widening should minimize impacts to the properties that line the roadway. The Kachina/Dry Creek intersection includes restricted sight distance, correction of the sight distance deficiencies should be corrected before Navoti Drive is connected to Kachina Drive. A contributor to the sight distance limitations at the Kachina intersection is the sharp curve on Dry Creek Road immediately to the north, realignment of this curve would improve the operations in this area.

The next feature of the plan is the extension of White Bear Road between Dry Creek Road and Roadrunner Drive (N-5) and displayed in Figure 10. This connection provides access to a traffic signal for residents of the Road Runner Rancho Subdivision. Additionally, flexibility is provided for persons wishing to access commercial properties between Roadrunner Road and Southwest Drive, including the City of Sedona offices.

The White Bear Road extension is a feature of the recommended plan that mitigates access restrictions that will be included in the raised median system along SR89A. Implementation of this connection should be designed to offer back-side access to properties along the highway, therefore driveway locations on the highway could be eliminated or limited to right-in and right-out operation. Once these access changes are implemented, business signing may need to direct drivers to parking areas.

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E 729,500

E 730,000

N 704,500

N 704,000

N 703,500

N 703,000

1"=200'

KACHINA DRIVE

DRY CREEK ROAD

L = 1140'

60' R/W

28'

NAVOTI DR

RADIO TOWER

RADIO TOWER

RUBY DRIVE (N-2)

CALLE DEL SOL

S.R. 89A

CEDAR LANE

FIGURE 9
NAVOTI DRIVE (N-3)
MEDICAL CENTER TO
KACHINA DRIVE

CH2MHILL

FILE NAME: 07conn03.dgn MODIFICATION DATE: 30-SEP-1997

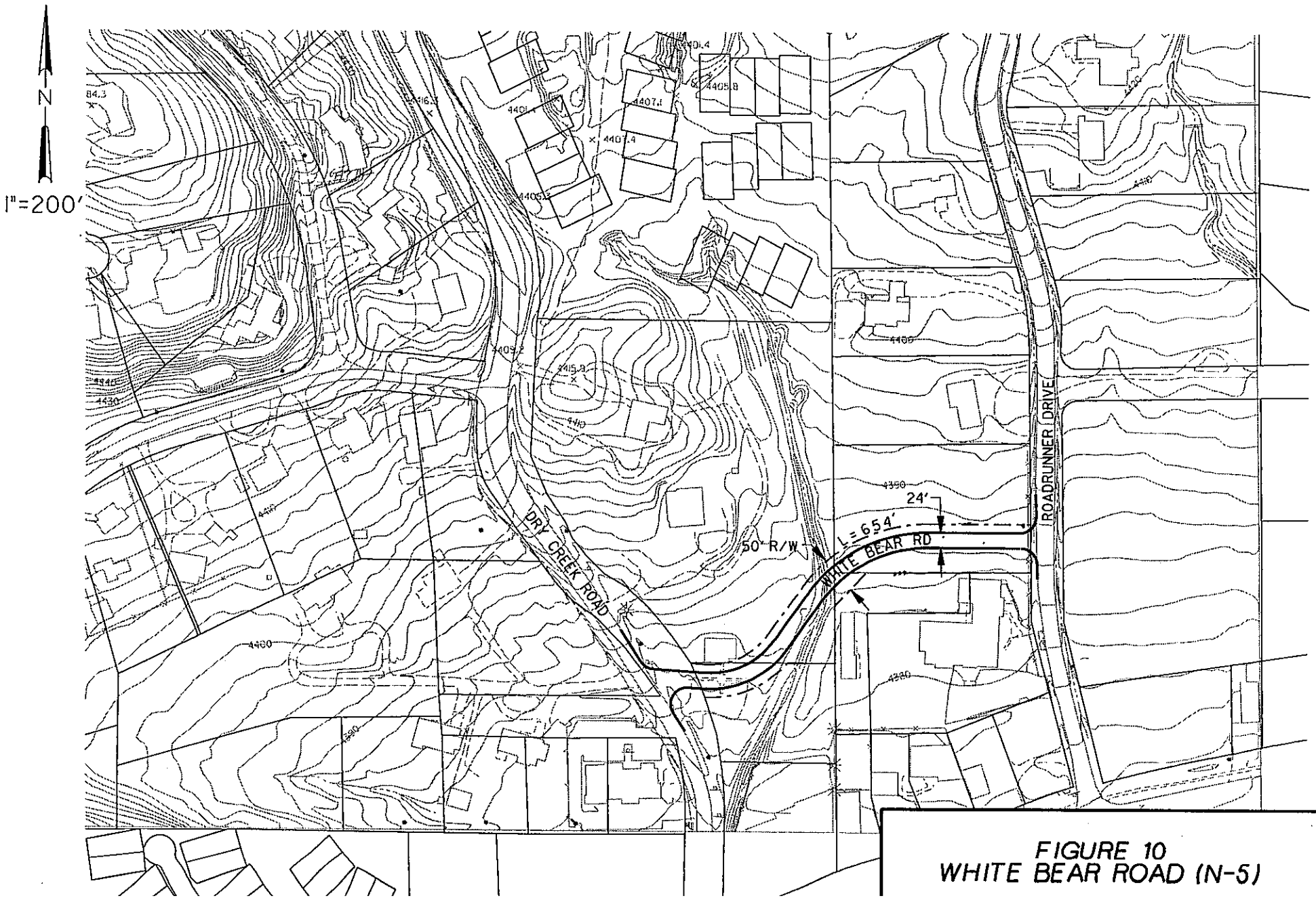


FIGURE 10
WHITE BEAR ROAD (N-5)

The N- 7 connection, Southwest Drive Commercial Access, is recommended to provide commercial access to the undeveloped lands east of Southwest Drive. This connection would have to be coordinated with development plans south of SR89A, where the S-9 connection is proposed.

The implementation of this commercial access is not in agreement with the raised median system proposed along SR89A. The proposed median system would have to be modified to allow for a median break at this location. The proposed median break at Southwest Drive may need to be eliminated to ensure the desired level of access control needed to improve operations along the highway.

The N-9 connection is also intended to give access to undeveloped lands, however, an important element of this connection is the connection to Madole Road. The N-9 connection should include a connection to Madole Road, first this will provide a second exit point for the residents along Madole, and second this will give those residents access to a traffic signal if implemented at Andante Drive.

The Goodrow connection (N-11) is proposed to meet several objectives for the residents of the Goodrow Subdivision and is depicted in Figure 11. First is access to the traffic signal at Rodeo Road and a second exit location from the subdivision. Additionally the connection can serve as backside access for the commercial properties along the highway from Rodeo Road to Goodrow Lane. Implementation of this connection could be accomplished through new commercial development. However, the City would need to acquire a portion of Goodrow Lane, this roadway currently is privately owned.

The Coffee Pot Extension (N-15) adds route flexibility for residents in the Sedona West and Coffee Pot subdivisions. Trips can be made to the commercial areas near the Basha's Center and Safeway Plaza without using SR89A, removing traffic from the section of the highway between Mountain Shadows Drive and Coffee Pot Road. This connection is displayed in Figure 12.

The Coffee Pot Extension is not proposed as an extension of the Sanborn/Thunder Mountain corridor, one will have to turn left from Sanborn onto Coffee Pot in order to use the extension. This orientation is suggested to ease neighborhood concerns that traffic operations of the Sanborn/Thunder Mountain corridor would not be carried through to this connection.

The N-18 connection is redundant to the existing roadway link between Mountain Shadows Drive and Posse Ground by way of Laguna Drive and Santa Barbara Road. This connection would become an important link in the Urban Pathways plan to provide efficient non-motorized travel through this section of the City. The N-18 connection should not be removed from the recommended plan, but should remain as a non-motorized connection.

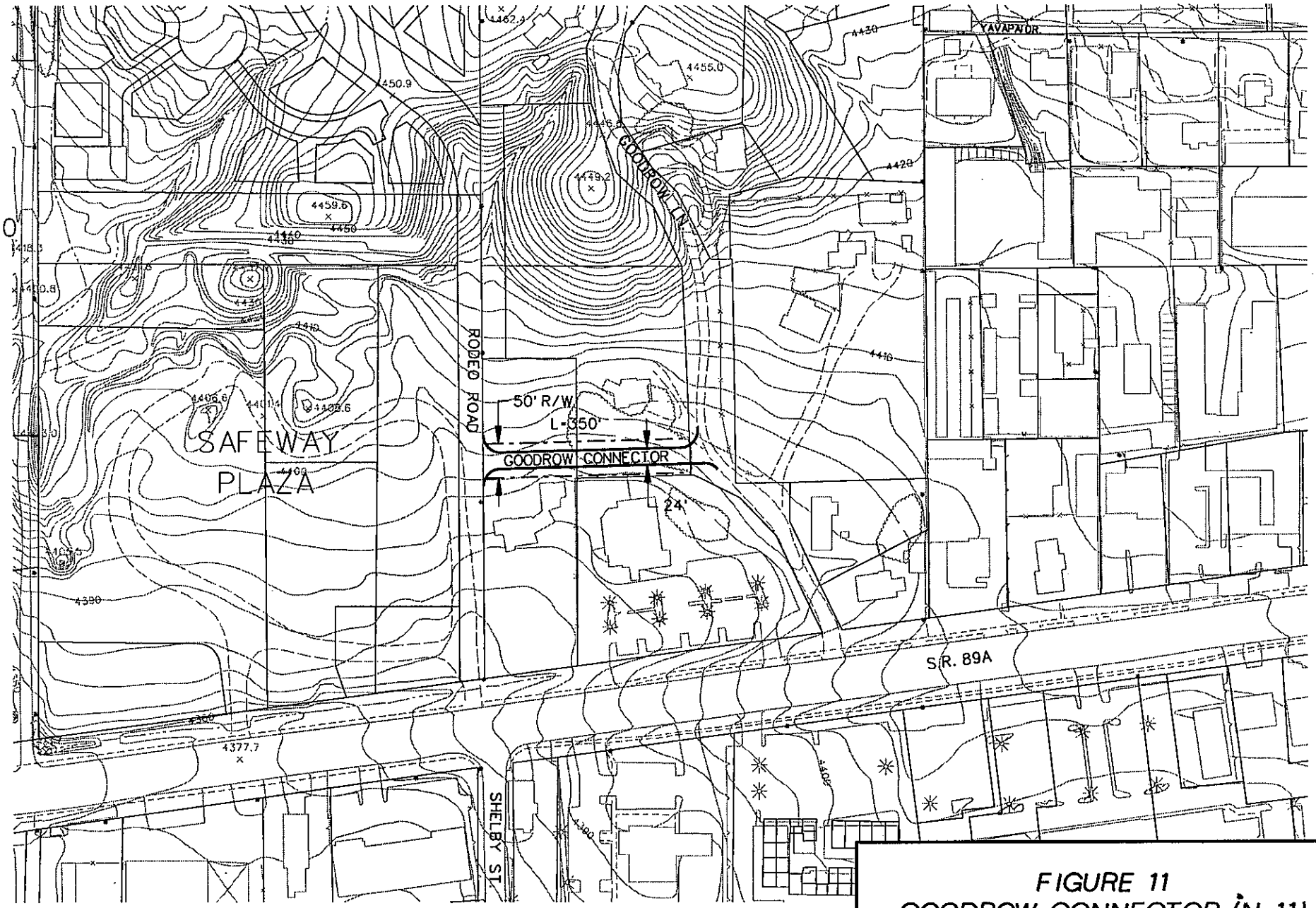


FIGURE 11
GOODROW CONNECTOR (N-11)

FILE NAME: 07conn10.dgn MODIFICATION DATE: 02-OCT-1997

N

1"=200'

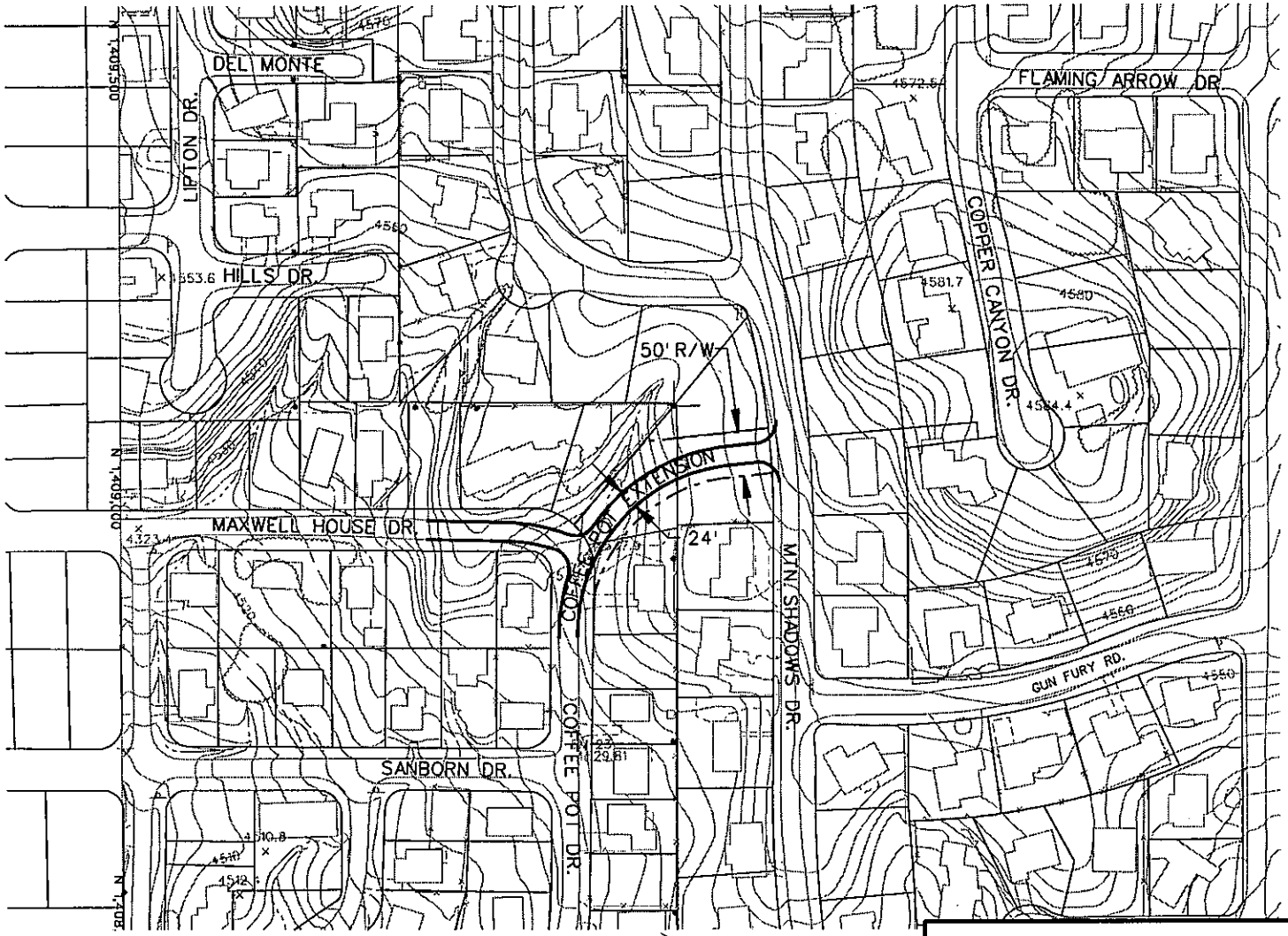


FIGURE 12
COFFEE POT EXTENSION (N-15)

The recommended plan includes a small section of the N-19 connection, this connection was eliminated as having a fatal flaw early in the study process. However the section of this connection that would provide access between the Trameri mobile home park and Posse Ground Road is recommended for implementation. This connection would provide a much safer access location for residents of the mobile home park to access SR89A. It is envisioned that this connection would be included in association with development at this location.

South Side Circulation Plan

The south side circulation plan involves implementing some key connections to fulfill the objectives of this study. Generally the proposed connections enhance residential access to SR89A, or offer facilities to be implemented in coordination with the raised median system along the highway.

The El Camino Grande extension (S-1) offers the entire Juniper Knolls area access to the traffic signal located at Arroyo Pinon and SR89A. This connection is included as Figure 13. Implementation of a traffic signal exclusively for the Juniper Knolls area at either Juniper Drive or Pinon Drive may not be practical, since a traffic signal at Foothills South Drive may take precedence. This connection becomes an important feature since connections between Foothills South and Juniper Knolls are not being recommended. The alignment of this connection could nearly follow an existing sewer easement.

The S-9 connection would be implemented when the properties it traverses are developed. However a connection between this future development and Carol Canyon Drive should be included to provide a second exit from the Settlers Rest subdivision.

The S-13 connection would also be implemented as part of a development plan. However, the City of Sedona would want to include a connection from the proposed development to Whippet Way. This connection is important for two reasons, first it would give residents of the Sedona Meadows area access to the traffic signal at Shelby Drive. Secondly the raised median system recommends limiting the Stutz Bearcat intersection with SR89A to right-in and right-out. It is important to provide a convenient alternative route to those residents that would be impacted by this change in access. The raised median system proposes a median break at the Madole intersection. However development plans at this location may request this median break be relocated to the Rigby intersection, for this change to be made access requirements of the surrounding properties must be addressed to ensure unacceptable impacts are not going to occur.

The Panorama to Sunset connector (S-14) offers route flexibility for residents in the Northview and Inspirational View subdivisions. Trips can be made to the commercial areas near the Basha's Center and Safeway Plaza without using SR89A, removing traffic from the section of the highway between Mountain Shadows Drive and Coffee Pot Road. This connection is displayed in Figure 14.

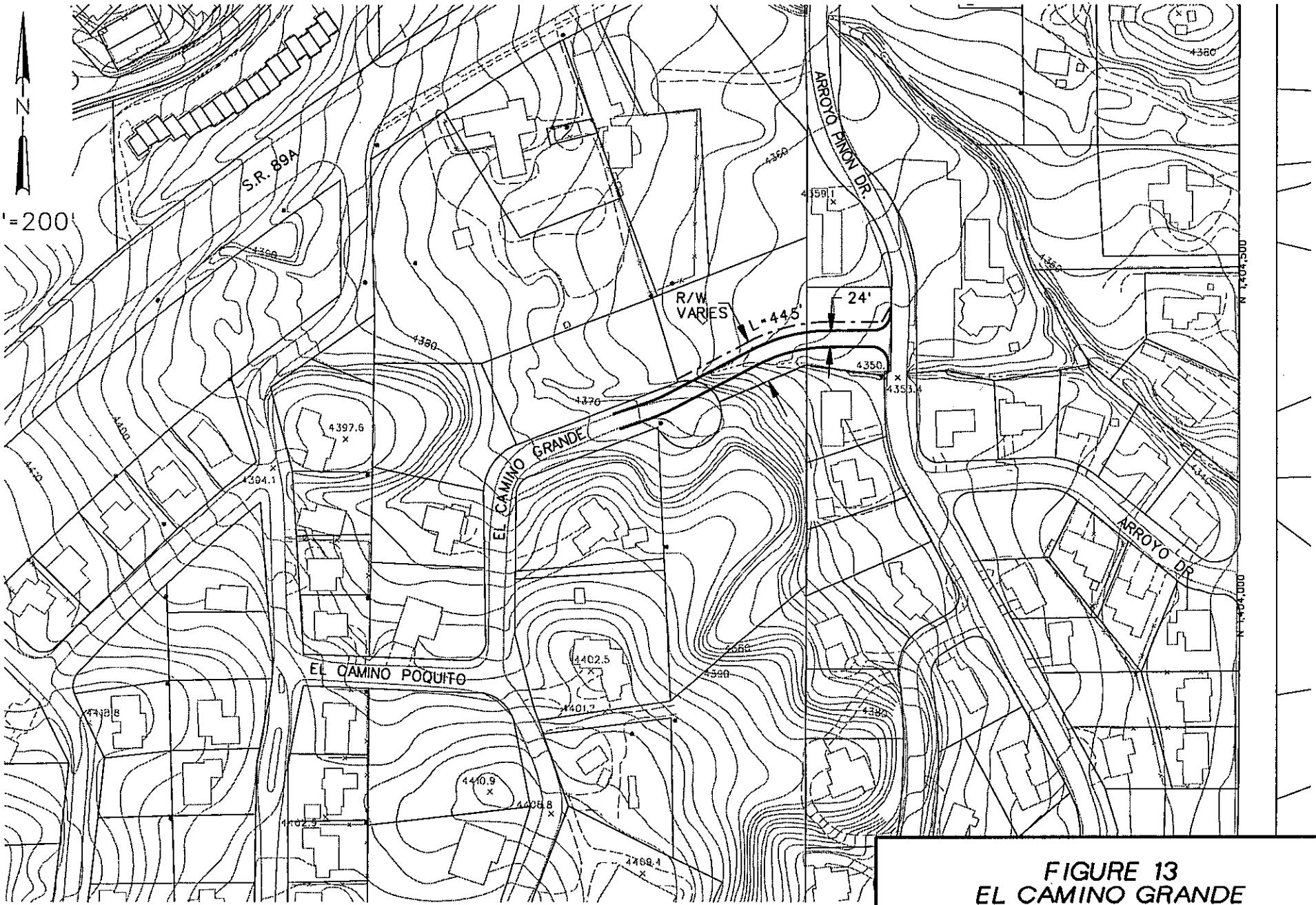
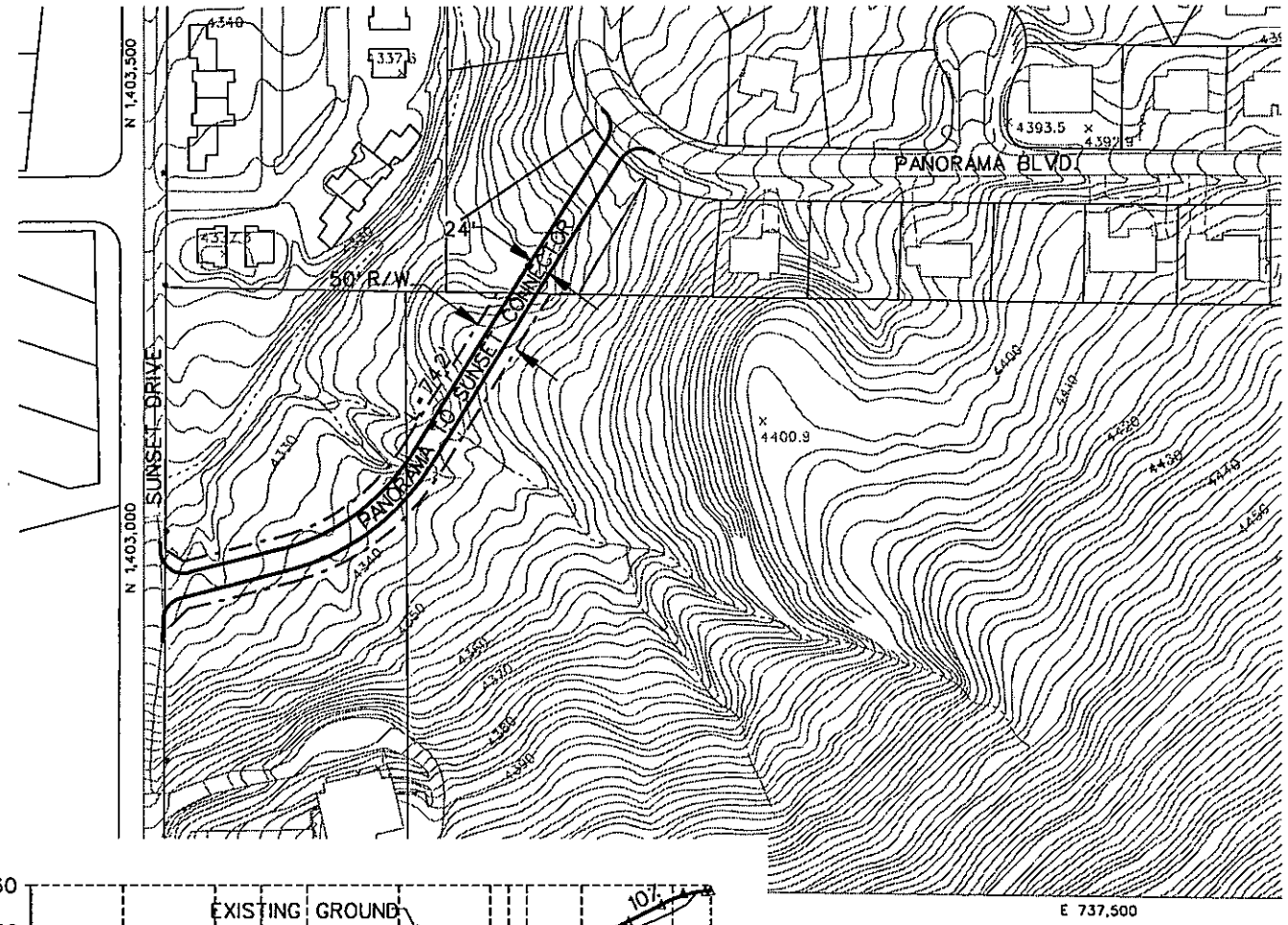


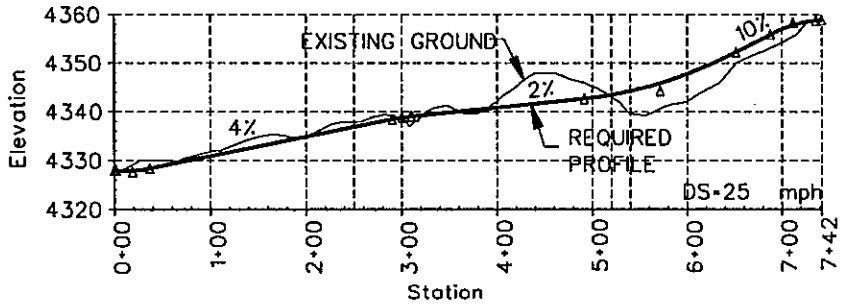
FIGURE 13
EL CAMINO GRANDE
EXTENSION (S-1)

FILE NAME: 07conn06.dgn MODIFICATION DATE: 30-SEP-1997

N

1"=200'





PANORAMA BLVD. TO SUNSET DRIVE CONNECTOR PROFILE

FIGURE 14
PANORAMA BLVD. TO SUNSET DR. CONNECTOR (S-14)

The S-14 connection is an important element of the recommended plan to help reduce trips on SR89A. The trips that this connection is intending to remove from the highway are short trips made by residents of the Northview, Inspirational View, and Oak Creek subdivisions. This connection is not intended to provide an alternate route for commercial traffic accessing the AAA Industrial Park. Design features of this connection should be included that discourage trips from being made on this connection for purposes other than intended, these features could include traffic chokers, speed humps, and landscaping as described in the mitigation of impacts section of this report. The S-14 connection would also serve as an important link in the development of a non-motorized network for this part of the City.

The Sedona Highway Corridor Assessment recommends to close several intersections along SR89A in order to reduce the number of locations that turning maneuvers are made along the highway. These locations include, View Drive, Inspirational Drive, and Birch Blvd. Connections S-20 and S-21 are important features in the recommended plan to mitigate these changes in access for the residents of the Inspirational View and Oak Creek subdivisions. Eliminating access at Inspirational Drive will not be practical unless an alternative connection between View Drive and Oak Creek Boulevard can be facilitated in conjunction with alternative land use/redevelopment options. Additionally the S-24, and S-25 connections provide neighborhood interconnections between the Saddlerock Homes, Oak Creek, Inspirational View, and Northview Subdivisions. Offering residents the flexibility to travel between these areas will help to remove short trips from the sections of SR89A with the highest traffic volumes. These connections are displayed in Figures 15 and 16.

A conceptual design of the S-25 connection indicates that a roadway can not be implemented on this alignment that would provide a safe operating speed over 10 MPH. One of the concerns of the residents during the public input process was that features should not be recommended that may create a safety concern. Therefore, the Panorama to Birch connection can not be recommended for implementation as a vehicular linkage. This increases the importance for implementation of the S-21 connection that would provide a connection between Oak Creek Blvd. and Birch Blvd. All of the trips emanating from the residential loops formed by Willow Way and Birch Street and the Saddle Rock area must access one of the heaviest traveled segments of SR89A through stop controlled intersections. As traffic volumes build, access to these residential, during peak travel periods, could become operationally challenging and a potential safety problem. Connectors S-21 and S-24 have been proposed as alternate connections to this area, which would reduce their dependency on SR89A as their only means of access. These connectors would also provide access to signalized intersections. The connection between Panorama and Birch Blvd. (S-25) may still offer an important link for a non-motorized system, however the right-of-way implications could be significantly less in this case over what is pictured in Figure 16.

N

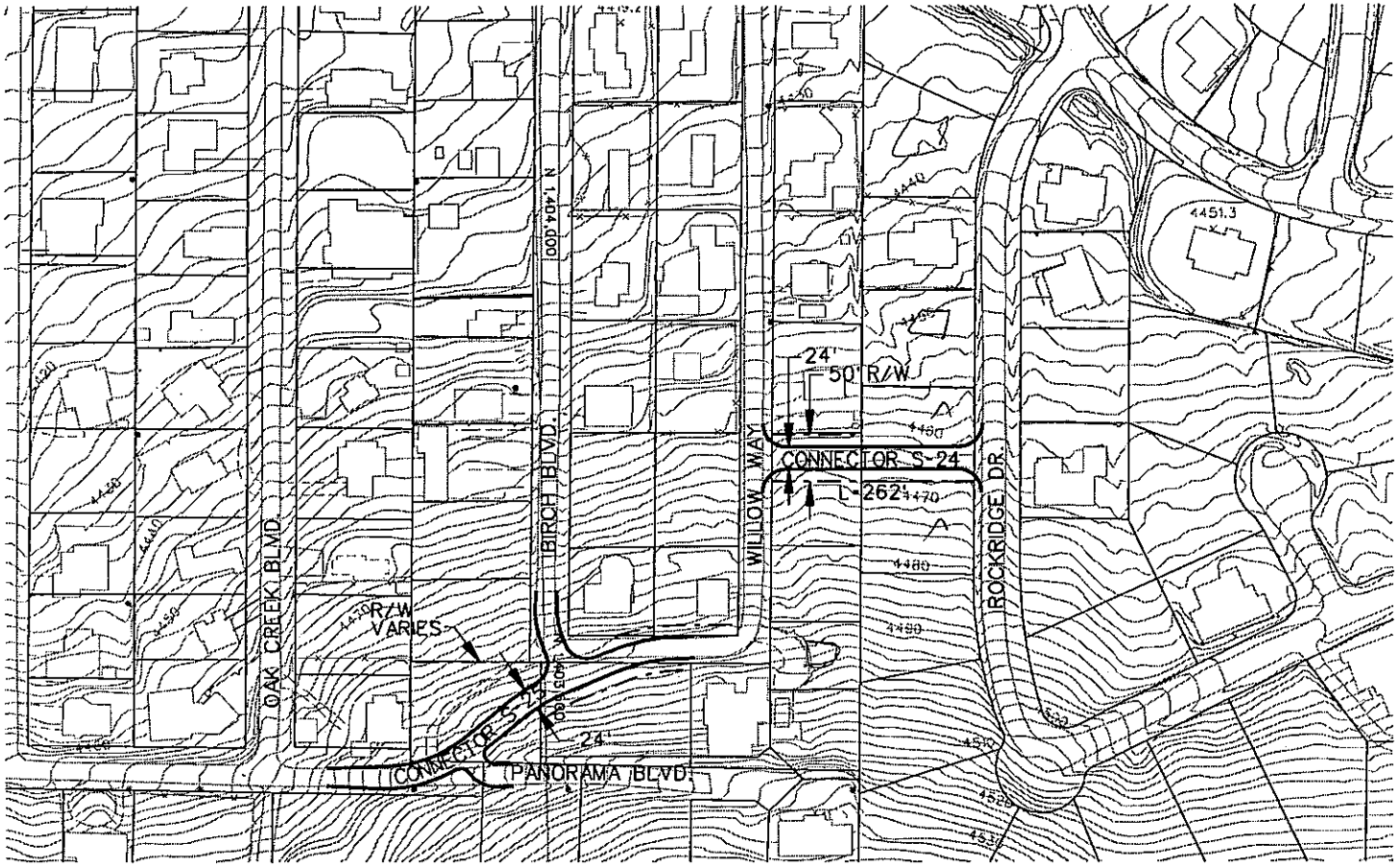
1"=200'

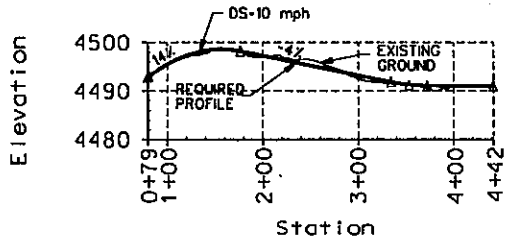
⊗ – Intersection is proposed to be closed.
"Sedona Highway Corridor Assessment"

FIGURE 15
COMMERCIAL ACCESS (S-20) &
OAK CREEK TO BIRCH (S-21)

N

1"=200'





PROFILE OF PANORAMA-BIRCH CONNECTION

FIGURE 16
WILLOW TO ROCKRIDGE (S-24)
& PANORAMA TO BIRCH (S-25)

Bicycle and Pedestrian

One of the objectives of this study is to ensure safe and efficient non-motorized traffic circulation within the community. A method for improving the safety of non-motorized traffic would be to provide an alternative to using SR89A, since this is a high volume arterial facility. Figure 17 displays possible bike routes that can be used to traverse West Sedona either on foot or by bike. Since the recommended plan of connections does not offer a complete off-highway cross town network south of SR89A, two locations are recommended for independent non-vehicular paths. The first location recommends using the extension of El Camino Real from the Foothills South Subdivision to URRL. This connection could not only be a bike path, but if properly designed could become an second exit from the Foothills South subdivision in cases of emergency, since the recommended plan for roadway connections did not fulfill this objective.

The second location for an independent path is from the Sedona Racquet Club to Stanley Steamer Drive, a non-motorized version of connection S-12. It is anticipated that the far southern section of the Keller Tracts will be developed with residential homes, a bike connection across these subdivided lots should be included during the site development. East of the Keller Tracts, the bike path is proposed across national forest lands to Stanley Steamer Drive. The bike path could share a sewer line easement that exists in this area to minimize impacts to national forest lands. The final link of this non-motorized route is across the Sedona Racquet Club parking lot, hopefully an alignment could be negotiated.

As shown in Figure 17 the suggested bike routes link some key destinations within West Sedona of residents of all ages, including schools, the library, parks, the City offices, the Sedona Medical Center, and the racquet club.

Significant Benefits

One significant benefit of the recommended plan is the anticipated reduction of traffic on SR89A. The following table identifies key links along the highway, and 2010 daily traffic projections for the recommended plan compared to traffic projections without any of the proposed connections.

TABLE 7
Predicted Reductions in SR89A 2010 Daily Traffic

Segment	Without Connections	With Connections	% Change
URRL - Foothills	26500	26300	-0.75%
Roadrunner-Tortilla	33500	31700	-5.37%
Andante-Rodeo	38900	37500	-3.60%
Coffee Pot-Mt. Shadows	43600	41300	-5.28%
Posse Ground-Soldiers Pass	39200	38800	-1.02%

BICYCLE ROUTES

Trailhead (Proposed)
Dry Creek Road
Thunder Mountain Road
Sanborn Drive
N-15
West Sedona School
N-18
Mallard
Andrews Drive
Soldiers Pass
Posse Ground
Coffee Pot Road
Rosemary Drive
Arapaho Drive
SR 89A
Library
City Offices
N-5
N-3
Shelby Drive
Sunset Drive
Northview
S-24
S-25
S-14
Trailhead
Airport Road
Neptune Park (Future)
Trailhead (Proposed)
Arapaho Circle
El Camino Road
Foothills South Drive
Racquet Club - Stanley Steamer Path
Sedona Medical Center
Navajo Drive
N-1
Cultural Park(Future)
Racquet Club
El Camino Real Path
Upper Redrock Loop Road
Sedona High School

LEGEND

ON STREET/SIDEWALK PATH	----------
INDEPENDENT PATH	————
KEY DESTINATIONS	⬢
CONNECTIONS USED BY PATHS	S-14

FIGURE 17

YEAR 2010 TRAFFIC	CITY OF SEDONA ARIZONA
CH2MHILL	BICYCLE ROUTES
ROUTE West Sedona	North/South Alternative Routes

Assuming that traffic signals are implemented at Foothills South Drive, and Andante Drive, all residents of West Sedona would have efficient access to a signalized intersection on SR89A with the following exceptions. The Settlers Rest subdivision, currently about 30 homes, would not have access to any signalized intersection on the highway. The Sedona Highway Corridor Assessment does recommend providing a break in the raised median system for Deer Trail Drive. The residents who live in the "residential island" at the north end of Madole Drive would not have access to a traffic signal, unless the N-9 connection is designed to provide a connection to Madole Drive.

The recommended plan would provide all subdivisions at least two exit locations, this is a benefit in emergency situations that may close sections of SR89A or if an individual intersection must be closed or restricted. A bike path connection is proposed for the extension of El Camino Grande and this could be designed to serve as an emergency exit location. The S-9 connection would provide a second exit from the Settlers Rest subdivision when development occurs in this section of the City.

Design Criteria

Typical Section

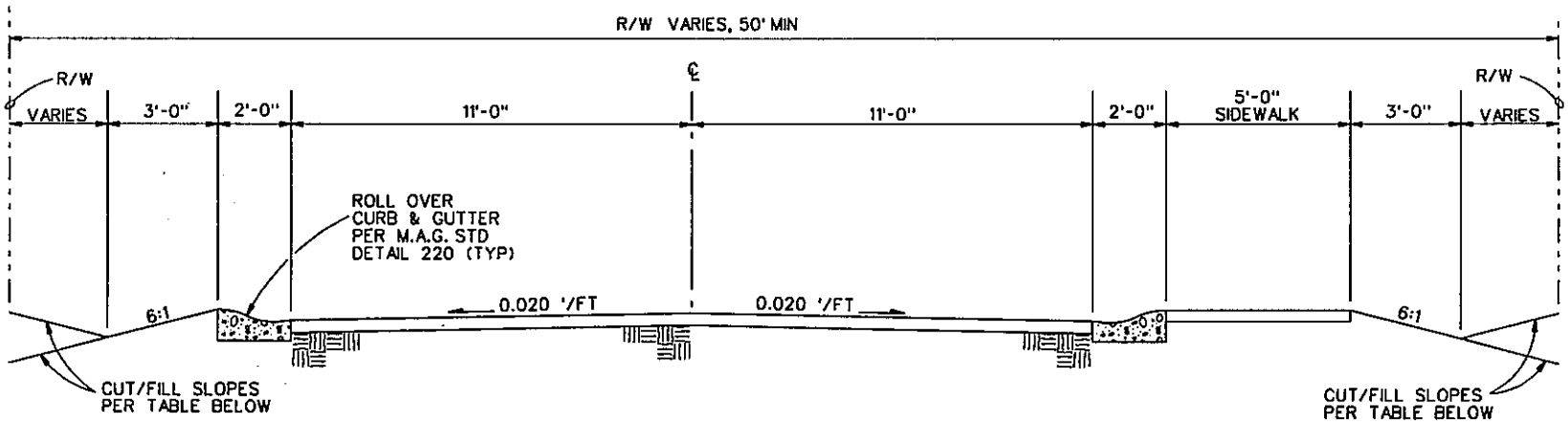
The roadway connections recommended in this study are intended to serve residential traffic, both motorized and non-motorized. The typical section that is proposed therefore is residential in nature, a narrow 22' wide roadway with an attached sidewalk on at least one side of the road is suggested, and shown in Figure 18.

Geometric Controls

In no situation are these connections envisioned to operate above 25 MPH, therefore horizontal and vertical designs are recommended to meet a 25 MPH design speed. The connections are not intended for commercial traffic or used by large trucks, the design vehicle used for turning maneuvers should be limited to a school bus. This will ensure that these connections could be included in a future transit system if applicable.

Sight Distances

Each intersection effected by the recommended plan should be evaluated to ensure that adequate sight distances are provided. Those intersections that include sight distance limitations should be recommended for stop sign control. Since these connections would be implemented in existing neighborhoods, attention should be given to headlight paths along the new roadways. Landscaping should be located to minimize impacts from headlights on existing homes.



CUT/FILL TABLE

HEIGHT OF CUT OR FILL (FT)	CUT/FILL SLOPE
2	6:1
2 TO 4	4:1
> 4	3:1

FIGURE 18
PROPOSED TYPICAL SECTION

1"=5'

Construction Costs

A planning level estimate of construction costs were completed for many of the connections. Several of the connections are envisioned to be included in association with new development and an estimate of costs were not calculated. The methods of calculation are included in Appendix A, these cost do not include an estimate of right-of-way acquisition. Of those connections that may involve City of Sedona funding, the estimate of construction costs are listed below,

Navoti Drive (Sedona Medical Center to Dry Creek) N-3	$463,000
Panorama to Sunset Connector, S-14	$190,000
White Bear Road, N-5	$184,000
Coffee Pot to Mountain Shadows, N-15	$130,000
El Camino Grande Extension, S-1	$107,000
Willow to Rockridge, S-24	$86,000
Goodrow Connection, N-11	$86,000
Commercial Access, S-20	$72,000
Oak Creek to Birch, S-21	$72,000

Right-of-way Requirements

The figures that have been previously provided showing a conceptual layout of each connection, include an estimation of right-of-way impacts. Significant right-of-way requirements are mentioned below.

Navoti Drive (N-3) would require the acquisition of three residential lots located west of the Sedona Library. Additionally, right-of-way or an easement would have to be acquired from the land currently occupied by the KAZM radio facilities.

The White Bear Road connection (N-5) would require right-of-way from three properties. One property contains a church, however the structure would not be impacted. The second requirement would be a partial take from a property zoned for office professional, and the third parcel is a vacant lot zoned for office professional on Roadrunner Drive. A portion of this connection could be implemented with new development.

The Goodrow connector (N-11) involves a partial take of a residential lot that contains an existing home. A second right-of-way requirement would involve a commercial lot that fronts both SR89A and Rodeo Road, acquisition of this land could be accomplished during development of this empty parcel. Additionally, the City of Sedona may have to acquire a portion of Goodrow Lane for SR89A to the proposed connection, this street is currently privately owned.

The Coffee Pot extension (N-15) involves the acquisition of two vacant residential lots, and a partial take of a third lot containing an existing home. The El Camino Grande extension (S-1) would involve partial acquisition of two empty residential lots.

The Panorama to Sunset connection (S-14) is proposed to cross a section of the National Forest. An easement would have to be obtained from the forest service to implement this connection. Additionally, one vacant residential lot would have to be acquired along Panorama Blvd, and a partial take from the church property along Sunset Drive.

For the implementation of the commercial access between Northview and View Drive (S-20) the City would have to purchase right-of-way from one commercial property and acquire one vacant residential lot. The Oak Creek to Birch connection (S-21) includes possible acquisition from four properties, three of which contain existing structures. It is not envisioned that any structures would have to be removed to implement the connection.

The S-25 connector is not being recommended for implementation as a vehicular connection, however if a non-motorized connection is implemented a partial take from one vacant residential lot would be required. The Willow to Rockridge connection (S-24) includes partial acquisition from two vacant residential properties.

Mitigation of Impacts

The residents of West Sedona voiced several significant concerns in relation to the implementation of off-highway connections. Many of the issues of concern are related to human behavior instead of engineering considerations, and therefore it is impossible to predict if the concerns raised by the residents would occur following implementation of a certain connection. However, there are some traffic design methods that can help to influence the behavior of drivers to produce more favorable operations. Issues raised by the residents such as crime rates, and property values are not subjects that can be breached by traffic engineering methods, and are not addressed in this section.

Issues that were raised such as traffic safety, vehicle speed, and traffic volumes can be addressed by two different approaches. The first approach is by traffic calming, this includes adding features to the roadway that will influence the drivers behavior. The features themselves can cause a driver to slow down, or even choose a different route. The second method is by traffic control, this includes communicating to the driver the rules for driving on the facility, and then backing up the rules with regulatory penalty. This concept relies on the driver to follow the rules, or by enforcement.

Traffic Calming Techniques

Traffic calming includes adding features to the roadway that slightly hinder the ability of the driver to negotiate the facility, the result of this hindrance is a reduction in travel speed or a choice to use a different route all together. The agency that implements traffic calming features are taking on a increased level of liability due to the addition of these features.

Speed Bumps and Humps

Speed bumps have been commonly used in parking areas for several decades, and these features are designed to cause a vehicle to slow down to less than 10 MPH in order to

negotiate the bump. This drastic of a speed reduction is not typically warranted on a City street. In the recent past the practice of implementing speed humps on City streets has gained popularity as a method of reducing vehicle speeds. The speed humps are designed to allow a vehicle to cross over the hump comfortably at speeds of 15-25 MPH. This is accomplished by making the design features of the hump less drastic then those of a speed bump. The ramp-up slope is more gentle and the width of the top of the hump is typically 5-8 feet in width as compared to less than 2 feet for a bump.

The speed hump feature should be considered where a facility is experiencing speeds much greater than 25 MPH, and there is a desire to reduce the speed down to 20-25 MPH. Typically a reason for speeds in great excess of 25 MPH on residential streets is cut through traffic that is saving on travel time by using the residential street as a bypass route to an arterial. Following the implementation of speed humps this time savings may no longer apply, and drivers may return to using the arterial roadway. Therefore, reductions in traffic volumes on residential streets can be realized with the implementation of speed humps.

Traffic Chokers

The use of traffic chokers are primarily limited to intersections. These features are used to neck down the entrance to a residential street by reducing the width to a minimum of 20 feet. The use of traffic chokers may have a slight effect on vehicle speeds but only in area of the intersection, and a driver may decide to re-route because of the added difficulty in turning onto the residential street. However, the primary purpose of traffic chokers is to discourage truck traffic from using the residential street by making it rather difficult to turn onto the street. The chokers do not create an impossible turning maneuver for the truck, but the turn must be made carefully and slowly.

Since the typical section proposed for the connections is only 22 feet wide, the addition of traffic chokers to these connections probably would not have any additional effect. Traffic choker features should be considered at neighborhood entrances off SR89A that may be experiencing unwanted truck traffic, and the existing roadway width is in excess of 36 feet.

Intersection Islands

An intersection island is constructed in the center of an intersection and is intended to impede the through movements of the intersection. The intersection island causes the through driver to slow down and drive around the island. Typically these features are only implemented at 4-leg intersections, a 3-leg intersection usually requires modification to bow out the intersection opposite of the third leg in order for the through movement to drive around the feature.

Intersection islands are primarily considered to reduce travel speeds of the through traffic at a 4-leg intersection. The design of the feature is intended to impede traffic, not to eliminate the through movement, including trucks. The island should be designed so truck traffic can negotiate the intersection, however at a greatly reduced speed. Thought should be given to emergency vehicles since these features will also impede response time to an incident. The design of the island, and type of landscaping implemented could be designed to allow emergency vehicles the option to drive over the island if necessary.

Median Islands

The raised median system proposed for SR89A is intended to only restrict turning maneuvers and would be designed to avoid impeding through travel. However median islands can be implemented on residential streets for the purpose of restricting travel. The median island is designed to form rather narrow lanes on each side, maybe as narrow as 8 feet in width, in order to reduce travel speeds. The median islands are not intended to be continuous, merely to form short pinch locations. The total length of the islands are typically 50 feet in length, and could incorporate landscaping or pedestrian refuge features.

The raised median feature should be considered where a slight reduction in travel speed is desired, and should only be located where the median will be in clear view of drivers from both directions. Placement of the median would impact the operation of adjacent driveways, therefore a section of roadway that is clear of access points should be chosen.

Traffic Control Techniques

Traffic control involves communicating to the driver limits or regulations that are applied to the facility. The purpose of traffic control devices is to help insure roadway safety by providing for the orderly and predictable movement of all traffic, and to provide warnings as are needed to insure the safe and informed operation of the traffic stream.

Stop and Yield Signs

The "Manual of Uniform Traffic Control Devices" (MUTCD) published by the US Department of Transportation gives clear guidelines when these signs are warranted. Because the Stop sign causes a substantial inconvenience to motorists, it should be used only where warranted. Warrants for the use of a Stop sign include intersections where a combination of high speed, restricted view, and serious accident record indicates a need for control. Prior to the application of these warrants, consideration should be given to less restricted measures, such as the Yield sign.

Speed Limits

The Speed Limit sign shall display the limit established by law, or by regulation, after an engineering and traffic investigation has been made. Speed zones typically have to include a combination of signing and enforcement to see an appreciable change in travel speeds.

Weight Limits

Weight limit regulations can be an effective deterrent to cut through truck traffic on a residential street. If the intention of the weight limit is to restrict trucks of a certain size, then the regulation should reference empty weight. The legend of signing may read NO TRUCKS OVER XXX LBS EMPTY WEIGHT.

Implementation Guidelines

The most important element to implementation of a mitigation method is identification of the problem. If complaints are being filed pertaining to high speeds, then the travel speeds should be surveyed for conformation of the problem. If high traffic problems are identified as the problem, then investigation should be made as to the source of the excess traffic. Without clear understanding of the problem, implementation of a mitigation measure may

be ineffective, or move the problem to a new location. The City of Sedona should identify thresholds to easily identify a problem that should be addressed. Speed reduction measures could be considered once the average travel speed is a certain amount above the posted speed. Excessive increase in traffic volumes could be set as a rate of growth in traffic volumes that is unusually higher then the City as a whole. Policy decisions such as these could eliminate the "squeaky wheel gets the grease" situations.

Once a problem is identified, the first recommendation should be to implement methods that do not involve physical features. If existing regulations are in place then these should be used before other features or regulations are added. Signing and enforcement of existing speed limits or weight limitations should be encouraged before traffic calming features are constructed.

Traffic calming features are intended to slightly hinder the operations along the roadway. Implementation of these features should be done in small doses until the desired results are obtained. In example, if intersection islands are to be implemented along a corridor, begin with the implementation of one or two and monitor the results, instead of immediately implementing an island at every intersection. Many communities are doing demonstration projects of traffic calming that include a variety of features, and then encourage the public to comment on their experiences.

Sanborn/Thunder Mountain Corridor

Many of the public comments pertaining to high travel speeds and unwanted traffic volumes were directed at the Sanborn/Thunder Mountain corridor. With the extension of both Rodeo Road and Thunder Mountain Road, this corridor may experience the situations that residents of West Sedona have concern with. If identification of a problem is accomplished for this corridor, then the corridor could be a candidate for traffic calming features.

For locations where travel speeds are excessively higher than the posted speed, speed humps may be warranted. Speed humps will reduce the speed of vehicles to 20-25 MPH in the immediate area of the hump. Average running speeds should be measured in excess of 30-35 MPH before implementation is considered. If the average running speeds are less than this, no appreciable reduction will be obtained. Intersection islands could be considered at select 4-leg intersections, however drivers should have clear view of the approaching intersection from both directions. The Sanborn/Rodeo and Sanborn/Sunshine intersections should not be considered because of the reverse curves that approach these locations.

Due to the fact that most of the existing streets along the Sanborn/Thunder Mountain corridor are narrow, and the numerous driveway locations along the corridor, median islands and traffic chokers should not be considered.

Implementation Program

Implementation of the recommended connections will be initiated by two primary sources, those connections that are associated with new development, and those that will be implemented by the City of Sedona.

Developer Connections

Many of the connections included in the recommended plan would be associated with new development, these connections include the following:

- N-1, and a portion of N-3, Navoti Drive
- N-2, Ruby Drive Extension
- N-5 (portion) White Bear Road
- N-7, Southwest Drive Commercial Access
- N-9, Commercial Access (Tranquil to SR89A)
- N-19, Trameri Mobil Home Park Access
- S-9, Commercial Access (Carol Canyon to SR89A)
- S-13, Commercial Access (Whippet Way to Shelby)

The schedule of implementation of these connections will be driven by the timing of the new developments that they are associated with, however these connections should be adopted by the City of Sedona. The adoption will ensure that the connections are included in the developers site plans.

Four of the developer connections may include involvement by the City of Sedona to complete, therefore funding should be available when required to efficiently implement the entire connection. First is a portion of N-3 (Navoti Drive); second is the White Bear Road connection (N-5). The third connection is the N-9 connection, the recommendations include a connection to Madole Drive in combination with the commercial access. The Madole connection may include the acquisition of right-of-way from commercial properties, and acquisition of a segment of Madole Drive.

The fourth situation where the City of Sedona may become involved is with the S-13 connection. The recommendations include a complete connection from Whippet Way to Shelby Drive. In order to complete this connection a residential lot will have to be purchased along Whippet Way, this lot currently is vacant.

City of Sedona Connections

The connections that will be initiated by the City of Sedona will primarily benefit residents of existing subdivisions and therefore developer funding may not be available. These connections include the following;

- N-3, portion of Navoti Drive

- N-5, White Bear Road
- N-11, Goodrow Connection
- N-15, Coffee Pot Extension
- S-1, El Camino Grande Extension
- S-14, Panorama to Sunset Connection
- S-20, Commercial Access (Northview to View)
- S-21, Oak Creek to Birch
- S-24, Willow to Rockridge
- Bicycle Path Connections

Priority of Construction

The priority for implementation is based on the results of the evaluation of the connections, those connections that faired better in the evaluation are considered for higher priority. The connections recommended for implementation can be placed into one of three situations as follows;

Significant System Connections - These connections offer significant benefits to the off-highway circulation system, and the impacts to implementation are relatively low. These connections include the Coffee Pot Extension (N-15), the El Camino Grande Extension (S-1), the Oak Creek to Birch connection, and the Willow to Rockridge connection (S-24). These connections are recommended for immediate implementation.

The Coffee Pot Extension (N-15) is envisioned to offer significant trip flexibility to the residents of the Sedona West and Coffee Pot areas. This connection could contribute to traffic volume reductions on the segment of SR89A with the highest existing and projected traffic volumes. The right-of-way impact includes two vacant residential lots.

The El Camino Grande extension provides convenient access for residents of the Juniper Hills area to the traffic signal located at Dry Creek Road. The proposed alignment traverses two vacant residential lots, and will follow an existing sewer easement.

The combination of the S-21 and S-24 connections offer a neighborhood route between two significant areas of West Sedona, the Saddlerock Homes area and the Northview/Inspirational View/Oak Creek area. The number of residents that live in these areas is significant, and providing these residents alternative routes is important. Another feature of the S-21/S-24 route is that all residents will have the option to access SR89A through a signalized intersection. Initially the only signalized intersection available will be at Northview, and the route provided from the Saddlerock area will be rather circuitous. However, the choice to use a signal will be available, and as traffic congestion increases on SR89A this option may become meaningful to a large number of the residents. As improvements are implemented along the highway these connections will become more significant, especially if a traffic signal is installed at the Oak Creek/Posse Ground intersection.

Raised Median Connections - These connections are required to be in place prior to the implementation of the raised median system along SR89A. These connections include White Bear Road (N-5), the Northview to View connection (S-20), and the Oak Creek to Birch connection (S-21). These connections are recommended to be programmed in coordination with the implementation of the raised median system along the highway. Benefits to the off-highway system would be realized if these connections are implemented ahead of the median system, however implementation will become critical once median placement begins.

Minor System Connections - These connections offer benefit to the off-highway system, however the benefits expected may not be as significant as other connections, or implementation may involve a higher level of impacts. These connections include Navoti Drive (N-3), the Goodrow connection (N-11), the Panorama to Sunset connection (S-14), and the bike/pedestrian path connections. Implementation of these connections is encouraged, however they could be given a lower priority than previously mentioned connections.

Acquisition Program

Each connection within the recommended plan includes right-of-way impacts, however acquisition of certain properties are of more importance than others. These properties are primarily residential properties that are currently vacant. The City of Sedona should consider an immediate acquisition program that targets these key parcels.

Preliminary Engineering

Prior to right-of-way acquisition preliminary engineering of each connection is recommended to more accurately quantify property needs. To support the recommended acquisition program preliminary engineering of the following connections is considered critical:

- N-3, Navoti Drive
- N-15, Coffee Pot Extension *(Completed in June 1997)*
- N-18, West Sedona Connection (for pedestrian/bike linkage)
- S-1, El Camino Grande Extension
- S-14, Panorama to Sunset Connection
- S-20, Northview to View
- S-21, Oak Creek to Birch
- S-24, Willow to Rockridge
- S-25, Panorama to Birch (for pedestrian/bike linkage)

Conclusion

The process used for this study included a strong public involvement process and engineered evaluations. The process indicates that there is a strong need for some off-highway circulation features in West Sedona, however that the locations of these features must be chosen carefully to ensure that the character of the neighborhoods is maintained.

The purpose of the off-highway system is to improve the ability of residents to travel within West Sedona. These improvements include providing residents the option to access SR89A through a signalized intersection, offering new routes between neighborhoods that would not require the use of the highway, and creating effective and safe corridors to be used by other modes of transport such as pedestrian and bicycle travel. The process used during this study identified the concerns and desires of the residents who will benefit from the system, and suggests the off-highway system that can both accomplish the purpose and address many of the concerns of the community.

The recommended plan would provide all residents of West Sedona a neighborhood route to a traffic signal for access to SR89A, assuming a signal is implemented at Foothills South Blvd. Additional connections are included to allow residents the option to avoid the most congested sections of the highway, and several connections are recommended to provide a pedestrian and bicycle connection to complete a multi-modal system throughout the area.

Many of the locations suggested for the connections is partially based on ease of implementation. Several connections are identified in areas where redevelopment is anticipated in the near future. It will be important for the City of Sedona to work closely with developers of these areas to ensure that these important connections of the off-highway system are implemented. Furthermore, several of the remaining connections have alignments recommended based on the availability of vacant lands. Many other route choices are available for these connections but the number of obstacles to implementation of the facility would be significant. The acquisition of properties for the higher priority connections should be an important feature of the implementation process.

West Sedona North/South Off-Highway Circulation Study

APPENDIX 1

Table A1

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

Navoti Drive (N-3)

Date: 11-Nov-97 Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	2,280	$ 68,400
Earthwork	Cu Yd	$ 7.60	13,906	$ 105,686
Pavement (Asphaltic)	Lin Ft	$ 50.00	1,140	$ 57,000.00
Drainage	16%	Pave,Curb, and Earth		$ 37,000
Traffic Items	10%	Pave, and Signals		$ 5,700
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 34,700
Subtotal				$ 308,000
Item				**Cost**
Design Engineering				$ 63,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.				
Mobilization/Demolition		10% of Subtotal		$ 30,800
Contingencies		20% of Subtotal		$ 61,600
Subtotal				$ 155,000
Total			***$***	***463,000***

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Table A2

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

White Bear Road (N-5)

Date: 11-Nov-97 Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea	$ 18,000.00	1	$ 18,000
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	1,308	$ 39,240
Earthwork	Lin Ft	$ 15.40	654	$ 10,072
Pavement (Asphaltic)	Lin Ft	$ 50.00	654	$ 32,700
Drainage	16%	Pave,Curb, and Earth		$ 13,100
Traffic Items	10%	Pave, and Signals		$ 3,300
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 12,300
Subtotal				$ 129,000
Item				**Cost**
Design Engineering				$ 16,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.				
Mobilization/Demolition		10% of Subtotal		$ 12,900
Contingencies		20% of Subtotal		$ 25,800
Subtotal				$ 55,000
Total			***$***	***184,000***

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Table A3

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

Goodrow Connector (N-11)

Date: ######## Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	700	$ 21,000
Earthwork	Lin Ft	$ 15.40	350	$ 5,390
Pavement (Asphaltic)	Lin Ft	$ 50.00	350	$ 17,500
Drainage	16%	Pave,Curb, and Earth		$ 7,000
Traffic Items	10%	Pave, and Signals		$ 1,800
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 6,600
Subtotal				$ 59,000
Item				**Cost**
Design Engineering				$ 9,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.				
Mobilization/Demolition		10% of Subtotal		$ 5,900
Contingencies		20% of Subtotal		$ 11,800
Subtotal				$ 27,000
Total			***$***	***86,000***

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Table A4

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

El Camino Grande Extension (S-1)

Date: ######## Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	890	$ 26,700
Earthwork	Lin Ft	$ 15.40	445	$ 6,853
Pavement (Asphaltic)	Lin Ft	$ 50.00	445	$ 22,250
Drainage	16%	Pave,Curb, and Earth		$ 8,900
Traffic Items	10%	Pave, and Signals		$ 2,200
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 8,400
Subtotal				$ 75,000
Item				**Cost**
Design Engineering				$ 9,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.				
Mobilization/Demolition		10% of Subtotal		$ 7,500
Contingencies		20% of Subtotal		$ 15,000
Subtotal				$ 32,000
Total			***$***	***107,000***

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Table A5

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

Panorama to Sunset Connector (S-14)

Date: ######## Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	1,480	$ 44,400
Earthwork	Cu Yd	$ 7.60	2,370	$ 18,012
Pavement (Asphaltic)	Lin Ft	$ 50.00	742	$ 37,100
Drainage	16%	Pave,Curb, and Earth		$ 15,900
Traffic Items	10%	Pave, and Signals		$ 3,700
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 14,900
Subtotal				$ 134,000

Item		Cost
Design Engineering		$ 16,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.		
Mobilization/Demolition	10% of Subtotal	$ 13,400
Contingencies	20% of Subtotal	$ 26,800
Subtotal		$ 56,000
Total	***$***	***190,000***

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Table A5

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

Commercial Access (S-20)

Date: ######## Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	600	$ 18,000
Earthwork	Lin Ft	$ 15.40	300	$ 4,620
Pavement (Asphaltic)	Lin Ft	$ 50.00	300	$ 15,000
Drainage	16%	Pave,Curb, and Earth		$ 6,000
Traffic Items	10%	Pave, and Signals		$ 1,500
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 5,600
Subtotal				$ 51,000

Item		Cost
Design Engineering		$ 6,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.		
Mobilization/Demolition	10% of Subtotal	$ 5,100
Contingencies	20% of Subtotal	$ 10,200
Subtotal		$ 21,000
Total	***$***	***72,000***

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Table A6

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

Oak Creek to Birch (S-21)

Date: ######## Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	600	$ 18,000
Earthwork	Lin Ft	$ 15.40	300	$ 4,620
Pavement (Asphaltic)	Lin Ft	$ 50.00	300	$ 15,000
Drainage	16%	Pave,Curb, and Earth		$ 6,000
Traffic Items	10%	Pave, and Signals		$ 1,500
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 5,600
Subtotal				$ 51,000
Item				**Cost**
Design Engineering				$ 6,000
Mobilization/Demolition		10% of Subtotal		$ 5,100
Contingencies		20% of Subtotal		$ 10,200
Subtotal				$ 21,000
Total			***$***	***72,000***

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Table A7

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

Willow to Rockridge (S-24)

Date: ######## Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	700	$ 21,000
Earthwork	Cu Yd	$ 7.60	726	$ 5,518
Pavement (Asphaltic)	Lin Ft	$ 50.00	350	$ 17,500
Drainage	16%	Pave,Curb, and Earth		$ 7,000
Traffic Items	10%	Pave, and Signals		$ 1,800
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 6,600
Subtotal				$ 59,000
Item				**Cost**
Design Engineering				$ 9,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.				
Mobilization/Demolition		10% of Subtotal		$ 5,900
Contingencies		20% of Subtotal		$ 11,800
Subtotal				$ 27,000
Total			***$***	***86,000***

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Table A8

City of Sedona - Inter-Neighborhood Connections

Conceptual Cost Estimate

Panorama to Birch (S-25)

Date: ######## Project Number: 142086.07.01

Calc'd By: J.D. Walker Checked By: M. Kies

Item	Units	Unit Cost	Quantity	Cost
Drainage Strucure	Ea		0	$ -
Curb, Gutter, & Sidewalks	Lin Ft	$ 30.00	524	$ 15,720
Earthwork	Lin Ft	$ 15.40	262	$ 4,035
Pavement (Asphaltic)	Lin Ft	$ 50.00	262	$ 13,100
Drainage	16%	Pave,Curb, and Earth		$ 7,000
Traffic Items	10%	Pave, and Signals		$ 1,800
Traffic Control	15%	Pave,Curb,Walls,& Struc		$ 6,600
Subtotal				$ 48,000
Item				**Cost**
Design Engineering				$ 6,000
Design Engineering to include such items as Field Reviews, Surveying, Geotechnical and Drainage Engineering.				
Mobilization/Demolition		10% of Subtotal		$ 5,900
Contingencies		20% of Subtotal		$ 11,800
Subtotal				$ 24,000
Total			***$***	***72,000***

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